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Book Paper Mills Accused of Price Control

Federal Trade Commission Issues Complaint Against Book Manufacturers Association, Officers and 45 Members, Charging A Combination and Conspiracy To Control Prices of Book, Coated and Similar Papers.

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 17, 1939—Charging a combination and conspiracy to control the prices of book paper, coated paper and similar papers, the Federal Trade Commission has issued a complaint against Book Paper Manufacturers Association, New York, its officers and executive committee, and 45 member manufacturers in various parts of the country said to produce approximately 86 per cent of the total volume of these products.

The respondents' activities allegedly resulted in their controlling the market for their products, suppressing price competition, increasing prices above the normal competitive level, and increasing the cost of paper used by the United States Government.

It is alleged that the 45 member companies, the association and individual respondents, pursuant to an understanding, agreement or conspiracy, organized the Book Paper Manufacturers Association which has acted as a clearing house for exchange of information including reports as to sales of book, coated and similar papers, together with prices, discounts and terms at which such papers are sold.

Regular meetings of association members are alleged to have been held for discussion of trade and competitive conditions and for agreement upon and establishment of trade policies to be followed and prices to be charged for the respondents' papers.

Zoning Systems and "Base Prices"

The respondents are alleged to have divided the United States into four zones and to have maintained identical zoning systems, fixing by mutual agreement uniform delivered or "base prices" for their papers in Zone 1. These prices, it is alleged, have been increased by 20 cents in Zone 2, 40 cents in Zone 3, and 60 cents in Zone 4, so that the price is the same to all purchasers in each respective zone regardless of their location therein or of the location of the respondent member making the sale.

The association, it is charged, has formulated and established uniform finishing differentials and the respondent members have adopted and maintained them without regard to the actual cost of finishing operations.

The association also is alleged to have compiled and promulgated, and the respondent members to have used, certain rules and regulations dealing with the allocation and classification of grades, quotations and sales, seconds, job lots, discontinued lines, and other so-called trade customs. It is alleged that the regulations also include subjects such as so-called unfair methods of competition and forms and methods for reporting statistics and filing prices.

Respondent Paper Companies

The respondent companies comprising the association's membership are: Allied Paper Mills, Kalamazoo, Mich.; American Writing Paper Company, Holyoke, Mass.; Appleton Coated Paper Company, Appleton, Wis.; The D. M. Bare Paper Company, Roaring Spring, Pa.; The Beckett Paper Company, Hamilton, Ohio; Bergstrom Paper Company, Neenah, Wis.; Martin Cantine Company, Saugerties, N. Y.; The Champion Paper and Fibre Company, Hamilton, Ohio; Champion-International Company, Lawrence, Mass.; The Chillicothe Paper Company, Chillicothe, Ohio; Columbian Paper Company, Buena Vista, Va.; Consolidated Water Power & Paper Co., Chicago.

Dill & Collins, Inc., Chillicothe, Ohio; Everett Pulp & Paper Company, Everett, Wash.; Fitchburg Paper Company, Fitchburg, Mass.; French Paper Company, Niles, Mich.; P. H. Glatfelter Company, Spring Grove, Pa.; W. C. Hamilton & Sons, Inc., Miquon, Pa., Hammermill Paper Company, Erie, Pa.; Inland Empire Paper Company, Millwood, Wash.; International Paper Company, New York; the Jessup & Moore Paper Company, Philadelphia; Kimberly-Clark Corporation, Neenah, Wis.; McLaurin-Jones Company, Brookfield, Mass.; The Mead Corporation, Chillicothe, Ohio; Miamisburg Paper Company, Miamisburg, Ohio; Miami Valley Coated Paper Company, Franklin, Ohio; The Michigan Paper Company, Plainwell, Mich.; Mohawk Paper Mills, Inc., Cohoes, N. Y.

Newton Falls Paper Company, Newton Falls, N. Y.; New York & Pennsylvania Company, New York; The Northwest Paper Company, Cloquet, Minn.; Oxford Miami Paper Company, New York; Oxford Paper Company, New York; Parker-Young Company, Boston; Rex Paper Company, Kalamazoo, Mich.; Schmidt Lithograph Company, San Francisco; Sorg Paper Company, Middletown, Ohio; Standard Paper Manufacturing Company, Richmond, Va.; Stecher-Troung Litho Corp., Rochester, N. Y.;

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International Paper and Power Nets $124,075

This Compares With $9,134,701 For the Year 1938—Tonnage Sales Off 23 Per Cent From Record Level of 1937—Demand Contracted Sharply During First Half Year and Prices For Many Paper Grades Declined.

Richard J. Cullen, president, in making his tenth annual report to stockholders of the International Paper and Power Company says in part:—

All of the 1938 figures exclude the accounts of International Power and Paper Company of Newfoundland, Limited, all common shares of which were sold in August, 1938 by Canadian International Paper Company to Bowater's Paper Mills, Limited, one of the leading newsprint producers in Great Britain. A cash consideration of $5,500,000 was received for the shares. Under the terms of the sale agreement International Paper and Power Company and subsidiary companies had no equity in the profit or loss resulting from the operations of the Newfoundland Company subsequent to December 31, 1937. International Paper Sales Company, Inc. will continue until the end of 1940 to distribute paper produced by the Newfoundland Company.

As a result of this sale substantial changes have occurred in the consolidated balance sheet of International Paper and Power Company and its present subsidiaries. Capital assets of the Newfoundland Company amounting to $36,090,242 and net working capital and other assets amounting to $4,730,937 have now been eliminated from the consolidated balance sheet. Correspondingly, the entire funded debt of the Newfoundland Company at the close of 1937, amounting to $24,883,305, has been dropped from the consolidated balance sheet together with $10,088,000 representing the 5 per cent Preference shares of the Newfoundland Company held by the public. The price of $5,500,000, minus expenses, at which the stock of the Newfoundland Company was sold resulted in a book loss of $362,388 as compared to the net worth of the Newfoundland Company included in the consolidated financial statements at December 31, 1937.

Earnings

For the year 1938, consolidated net profit of International Paper and Power Company and subsidiaries amounted to $124,075 as compared to $9,134,701 in 1937. Tonnage sales were off 23 per cent from the record levels of 1937. Particularly during the first half the year demand contracted sharply and prices for many grades of paper declined. Even in the newsprint division, where prices were at a reasonable level for the first time in six years, 1938 earnings were lower than in 1937 because of the reduced demand.

Interest on funded debt amounted to $3,584,475 in 1938 as compared to $4,123,523 in 1937. The 1937 figure included interest on funded debt of International Power and Paper Company of Newfoundland, Limited amounting to $1,093,640.

Taxation

Amounts set aside during 1938 for taxes—local, state, federal and foreign—of International Paper and Power Company and its present subsidiaries totalled $3,110,301. This is equivalent to $3.36 on each outstanding share of preferred stock.

Included in this total are property taxes and other taxes not based on income amounting $2,797,683 as compared to $2,611,097 in 1937. The increase was due to the rise in social security taxes from $556,892 in 1937 to $703,075 in 1938, and minor increases in other taxes.

Accruals for income taxes amounted to $312,619 which is equivalent to 71 per cent of the balance of consolidated earnings for the year before such taxes. This high percentage is due to the fact that each subsidiary company which earned a taxable profit in 1938 must pay an income tax based on such profit without any credit for losses incurred by other subsidiary companies.

Financial Position

During the year 1938 the companies paid off funded debt of $4,805,242, of which $2,561,495 was included among current liabilities and the balance of $2,243,747 was included under funded debt in the December 31, 1937 balance sheet. Additional funded debt aggregating $6,346,673 was issued during the year representing obligations incurred in connection with completion of the Springhill mill and the acquisition of properties.

Consolidated net working capital at December 31, 1938 amounted to $33,663,165, made up of current assets of $47,765,710 less current liabilities of $14,102,545. The current liabilities include $4,717,970 of funded debt maturities payable in 1939. As indicated in the Summary of Financial Operations on page 29, consolidated net working capital increased $1,748,344 during the year.

Operations

Total production of paper and paperboard in North America in 1938 was approximately 15 per cent less than in 1937. Throughout the first half of 1938 operations in the pulp and paper industry continued at and below the low levels which in the fourth quarter of 1937 had succeeded more than a year of record-breaking activity. The influence of the severe business recession, abnormal inventories of paper in consumers' hands and other adverse conditions combined to create exceptional difficulties for the industry. The second half of the year brought an encouraging measure of improvement, but it was insufficient to do more than partially offset the poor results of the first half.

Newsprint production by North American mills in 1938 was 25 per cent below the high record of the previous year. This unprecedented decline in newsprint production was due in large measure to the abnormal stocks of newsprint accumulated by the newspaper publishers in 1937 in anticipation of the $7.50 a ton increase in price that went into effect January 1, 1938. Liquidation of these abnormal stocks, though retarded by a sharp decrease in the

consumption of newsprint, had largely been completed by the end of 1938. The price of $50 a ton for newsprint delivered in New York has been continued for the year 1939. All other grades of paper, as well as pulp, suffered in varying degree from the serious curtailment in demand. The low rate of mill operations resulted in excessive production costs and, under keen competition, prices on most grades were forced down to unprofitable levels. However, the upturn in demand during the fourth quarter of the year permitted increased production and relieved the pressure on prices.

During 1938 production by the subsidiary companies totalled 1,548,282 tons as against a 1937 total of 1,933,928 tons (excluding 181,932 tons of newsprint produced by International Power and Paper Company of Newfoundland, Limited). The figures by grades compare as follows:

	1938	1937
Newsprint	415,986	648,904
Ground wood specialty papers	137,406	179,053
Book and bond papers	91,762	134,231
Southern kraft paper and board	644,662	650,030
Pulp for sale	153,176	218,582
Tissue and wrapping papers	29,347	33,010
Bags	75,943	70,118
Total	1,548,282	1,933,928

During 1938 construction of Southern Kraft Corporation's Springhill, Louisiana, bleached sulphate pulp mill and kraft board mill was substantially completed. Total construction cost through December 31, 1938 was $10,084,893. The bleached pulp mill started operation in July, 1938.

As stated in the 1937 annual report the program for bringing all operating mills into an efficient competitive condition was largely completed that year. Additions and improvements (less sales and retirements) to other operating properties amounted to $2,328,524 in 1938 as compared to $7,181,137 in 1937.

Public Utility Holding Company Act

Under date of January 31, 1939 a Plan was put into effect which divorced International Paper and Power Company from control of any public utility operating companies and permits orderly liquidation of the shares and indebtedness which International Paper and Power Company and subsidiaries held in such companies. Continued ownership of these securities might have required registration by International Paper and Power Company and International Paper Company under the Public Utility Holding Company Act of 1935. This would have subjected the Company and its subsidiaries to a system of governmental supervision designed solely for the regulation of public utility holding companies and their subsidiaries which would be burdensome and inappropriate for a company engaged primarily in the manufacture and sale of paper and pulp. Pursuant to this Plan, there have been transferred to three individuals acting as Liquidating Trustees all the common shares and Class B shares of International Hydro-Electric System owned by the Company and International Paper Company, and in addition the entire outstanding capital stock of two small subsidiaries, (The Olcott Falls Company and Oconto River Power Company), and certain indebtedness of The Olcott Falls Company. The two latter companies own relatively unimportant developed water power properties located respectively, at Wilder, Vermont, and Oconto Falls, Wisconsin. Under the Liquidating Trust Agreement and a Plan filed by the Liquidating Trustees with the Securities and Exchange Commission, the Trustees are bound to use their best efforts to dispose of the Trust Estate for such consideration and on such terms as International Paper Company may direct. Such disposition may involve obtaining the approval of the Securities and Exchange Commission. The Liquidating Trust by its terms may continue until December 31, 1943, but after December 31, 1941, the Securities and Exchange Commission may under certain circumstances request a court to appoint new Trustees, and in that event International Paper Company's only voice in determination of the consideration or terms of disposition would be the right to make representations in that regard to the court. While the trusteed shares are held in the Liquidating Trust, voting power thereon is vested in the Liquidating Trustees.

Following conferences with the Securities and Exchange Commission and immediately after transfer of the shares of International Hydro-Electric System and other assets to the Liquidating Trustees, International Paper and Power Company amended its original application for exemption from the Public Utility Holding Company Act of 1935. International Paper Company joined in this amendment and the two Companies requested the Securities and Exchange Commission for an order declaring that neither of them is a holding company as defined by that Act. Favorable action by the Securities and Exchange Commission on this amended application will eliminate any necessity, so far as now foreseen, for the order issued by the Commission in 1937 in connection with the Plan for Change in Capitalization referred to in the annual report for that year. The Circuit Court of Appeals for the First Circuit has held that the Commission acted beyond its jurisdiction in issuing the 1937 order, in view of the fact that International Paper and Power Company is not a registered holding company.

International Hydro-Electric System has registered as a holding company under the Public Utility Holding Company Act of 1935. The Liquidating Trustees have also registered as a holding company under the Act.

ACCUSED OF PRICE CONTROL

(Continued from page 13)

S. D. Warren Company, Boston; Watab Paper Company, Sartell, Minn.; West Virginia Pulp & Paper Company, New York; Watervliet Paper Company, Watervliet, Mich., and Wheelwright Papers, Inc., Chillicothe, Ohio.

Complaint Names Officers and Members

The complaint also names as respondents individual officers and executive committee members of the association and alleges that they control the association's activities. They are: P. H. Glatfelter, Spring Grove, Pa., and C. L. Barnum and R. S. Berry, both of New York, individually and as officers, and C. A. Clough, New York; D. R. Curtenius, Kalamazoo, Mich.; G. K. Ferguson, Watervliet, Mich.; P. H. Glatfelter; C. A. Gordon, New York; W. H. Kenety, Cloquet, Minn.; J. R. Miller and F. H. Savage, New York; J. S. Sensenbrenner, Neenah, Wis.; R. D. Smith, Boston; L. G. Thomson, Hamilton, Ohio, and R. I. Worrell, Chillicothe, Ohio, individually and as members of the executive committee.

Alleging violation of the Federal Trade Commission Act, the complaint grants the respondents 20 days for filing answer.

Laboratory Discovers New Uses For Lignin

U. S. Forest Products Laboratory Announces Salvage of 1,400,000 Tons of Lignin Dumped Yearly Into Streams By Pulp Mills May Be Utilized To Manufacture New Products—Reservoir Plan Rejected—Other News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., April 17, 1939—Discovery of new and valuable products which can be made from lignin have been announced by the United States Forest Products Laboratory, Madison, Wis. They will mean the salvage of approximately 1,400,000 dry-weight tons dumped into streams each year by paper and industrial cellulose mills, estimated to be one-fourth of the structure of all fibrous materials. Their commercial use also will eliminate pollution and disposal problems faced by the mills.

Dr. C. E. Sherrard and Dr. E. E. Harris were co-discoverers of these new uses. By adding hydrogen to lignin, they have found new substances which can be used as wood preservatives, fungicides, insecticides, adhesives, solvents and plastic materials.

Because of its complex chemical nature, lignin in its natural form has baffled scientists until, by submitting it to the hydrogenation process, the forest service scientists changed its chemical nature so it could readily be broken down into component parts. The process has already been used to make wood alcohol.

The new process has been patented and assigned to the United States secretary of agriculture.

Fox River Reservoir Plans Rejected

Hopes for a series of reservoirs on the Fox River to produce a uniform flow of water during the dry seasons have faded with announcement that the United States War Department has rejected a revised report following a preliminary examination. The plan embodied impounding of flood waters in the Wolf River, a tributary of the Fox, during the spring season and releasing them when water stages were low. This is the second refusal to accept the plan. The War Department announced, however, that interested parties may appeal from the conclusions of the board of engineers.

Paper Mills Seek New Legislation

Legislation is sought in Wisconsin which will also ease the problem of constructing further reservoirs and dams for paper mills on the Wisconsin River. A bill has been introduced at Madison, Wis., under which the Wisconsin Valley Improvement Company of Wausau, Wis., could proceed with this project. The company is a cooperative organization of paper mill and power company water power users which controls the dams on the upper river and the flow of water.

One change in the present law would wipe out the clause requiring the company to purchase 85 per cent of the lands used for reservoir sites before it could condemn remaining flowage rights. The bill wipes out the 85 per cent clause and permits the company either to purchase, lease, or resort to eminent domain "for the purpose of creating, acquiring, maintaining and operating the dams and other works authorized." It also permits the company to "operate waterways for the purpose of diverting flood waters from the Wisconsin River to reservoirs on other rivers, subject to necessary approval by the Wisconsin Public Service Commission."

Last year the company, headed by George W. Mead, president of the Consolidated Water Power and Paper Company, attempted to obtain PWA and RFC financing of $26,000,000 to develop water power and storage. The grant did not materialize, and it is rumored private capital will be sought to carry the plans through. The most important section of the project is the construction of a $5,000,000 reservoir on the Little Eau Pleine River. It would hold 85 per cent more water than is held by all existing storages, and would be fed by a canal that would lead from the Wisconsin River.

The City of Kaukauna now has a crew of 157 men working on its new power project utilizing the power dam on the Fox River formerly owned by the Patten Paper Company, Limited. Blasting is in progress to produce an 85-foot channel approximately 1,000 feet in length to the Fox River. Two temporary dams have been completed to shut off the flow of water. A large amount of earth and rock is being excavated and will be used for fills and riprap.

The city will ultimately be able to develop 6,000 kilowatt hours at the hydro-electric plant it will later build. The entire project will require about two years to complete and will mean cheaper power for the industries there.

Kimberly-Clark Directors Re-elected

All directors of the Kimberly-Clark Corporation were reelected at the annual meeting of stockholders at Neenah, Wis., last week. They are: F. J. Sensenbrenner, Ernst Mahler, J. S. Sensenbrenner, S. F. Shattuck, Charles H. Sage, C. B. Clark, J. C. Kimberly, J. R. Kimberly and F. E. Sensenbrenner, all of Neenah, Wis.; Cola G. Parker and H. G. Boon, Appleton, Wis.; John Hancock, New York City, and Walter Kasten, Milwaukee, Wis.

Fox River Efficiency Contest Closes

A contest was recently completed by the Fox River Paper Corporation, Appleton, Wis., in which employees were asked to submit ideas for improving efficiency, economy and safety in the plant. R. E. Fahrenkrug won first prize, William Steudel, second, and John Laeyendecker, third. Twelve others won prizes.

New Recreation Activities at Kimberly-Clark

Through efforts of the Lakeview Recreation Association, new activities are being offered employees of the Lakeview mill of the Kimberly-Clark Corporation, Neenah, Wis. A mill rifle club is being organized for target shooting, and a new bowling association is being formed. Softball and horseshoe tournaments also are being organized. The mill has a band of 32 pieces, and is sponsoring a benefit movie to purchase uniforms.

Paper and Cordage Men Enjoy Shad Dinner

Philadelphia Paper and Cordage Association Holds Fourth Annual Shad Dinner With Seventy-nine Members and Guests Present — Women's Branch of Paper and Cordage Association Organized — Other News.

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., April 17, 1939—With an attendance of seventy-nine members and their guests, the fourth annual shad dinner of the Philadelphia Paper & Cordage Association, held in Kugler's on Friday evening, April 14th, passed into history. Notably present among the out-of-town guests were Jules Timer, Sherman Paper Products, Newton, Upper Falls, Mass., and O. Kai Madsen, Badger Paper Mills, Peshtigo, Wis. During the dinner, a troupe of musicians, called "The Strollers," mingled among the diners in Colonial costumes, and played and sang requested selections, after which a motion picture titled "The Isle of The Pearl" was shown. Those present were very much intrigued with the picture, which was brimming over with the romance of a young Romeo, whose agility in cliff climbing was one of the qualifications necessary to win his fair lady.

J. R. Howarth Compliments Association

At the conclusion of the dinner, President John R. Howarth, in happily chosen words, said: "It is with pride and admiration that I bring to you greetings and best wishes for your continued growth and development. Each year your annual shad dinner has become a more prominent feature of the activities of this Association. Regardless of the times or adverse conditions, you have grown bigger and better, and now your Association is recognized as a great factor because of its achievements and because of the services you are rendering to the paper industry as a whole. So, tonight, I ask you to join me in giving thanks to the organizers of the Philadelphia Paper & Cordage Association because of their unselfishness, and because of their forethought in designing an Association which has definitely created better opportunities for the manufacturer, for the buyer and for the seller of paper alike. The success of this Association has come through its teachings of the moral and spiritual law."

Leonard Fitzgerald, in his inimitable way, gave some recitations from James Whitcomb Riley's poems, which were very well received. The Entertainment Committee, comprising George K. Hooper, Harry S. Platt, Frank T. Hufnal, Lee Johnson, Sam Shryock and E. K. Lay, as chairman, distributed bazookas, replicas of the type used by Bob Burns, to forty lucky number holders, and as a fitting climax the recipients of the bazookas, accompanied by the orchestra, played and sang "Should Auld Acquaintance Be Forgot."

E. L. Richards, chairman of the Golf Committee, announcd that the first golf tournament of the season will be held at Pine Valley Country Club on April 26th.

Women's Branch of Association Organized

Mrs. E. K. Lay, Mrs. George K. Hooper, Mrs. Lee Johnson, Mrs. E. L. Richards, Mrs. Harry S. Platt, Mrs. David Wickerham and Mrs. Carroll T. Gardner, organized on February 8th The Ladies Branch of the Philadelphia Paper & Cordage Association. It will be the purpose of The Ladies Branch to raise funds for relief work at the Settlement House of the Salvation Army, and their scheduled meetings are the second Wednesday of each month at 2 P. M. in the Salvation Army Settlement House.

While this Branch is in its infancy, so-to-speak, it already boasts of a very large membership, and is hopeful before many more meetings take place, to augment the membership considerably. All ladies over seventeen years of age, wives, daughters, sisters or secretaries of the members of The Philadelphia Paper & Cordage Association are eligible to membership. The Ladies Branch has already formulated plans for a card party to be held on Wednesday, April 26th in the Emerald Room of the Adelphia Hotel. There will be very attractive table prizes and quite a number of door prizes, and the tickets are nominally priced at 50 cents. The proceeds of this card party will serve as a nucleus to the fund for the benefit of relief work at the Settlement House of the Salvation Army.

Saxe Paper Co. Adds New Line

Nathaniel Saxe, owner of Saxe Paper Company, 320 Race Street, announces the addition of a new line of box and fancy papers for paper box manufacturers. Joseph Maerz, popularly known as Joe to the trade, will have charge of this new line. Mr. Maerz, formerly with A. S. Datz Company for twenty-five years, is a specialist in this particular line. Bertram Blumenthal, who for many years was associated with the clothing and retail trade, has also joined the Saxe Paper Company and will handle the regular wrapping tissues and general line in Philadelphia. Mr. Saxe has been very active in association work of The Paper Trade Association of Philadelphia for a number of years, and is an esteemed member of the Board of Governors for 1939.

Alliance Paper Mill Reelects

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., April 17, 1939—The annual meeting of the Alliance Paper Mills, Limited, was held at the sales office in Toronto last week when reports showed that the past year had on the whole been a good one, nearly equaling the record of 1937. The company has plants at Merritton and Georgetown. Harold Crabtree was re-elected president; George W. Pauline, Toronto, first vice president and managing director; L. E. Fleck, Georgetown, second vice president and assistant managing director; J. R. Leslie, Merritton, secretary-treasurer; H. F. E. Kent, Toronto and Harold Steele, K. C., Toronto, directors. Business with the plants of the company is ahead of last year.

Financial News of Pulp and Paper Industry

Union Bag Reports First Quarter Earnings—Lily-Tulip Cup Shows Net Profit—Another Step Completed In International Paper Plan—Net Loss Reported By Continental-Diamond Fibre — Dixie-Vortex Profits Down.

New York Stock Exchange

High, Low and Last for the Week Ending April 19, 1939

	High	Low	Last
Armstrong Cork Co.	36¼	34¼	35¾
Celotex Corp.	12⅝	10¾	11⅜
Celotex Corp., pf.	65	64	65
Certain-Teed Products Corp.	8½	7½	7⅞
Certain-Teed Products Corp., pf.	29½	26	27½
Champion Paper & Fibre Co.	22	20½	22
Champion Paper & Fibre Co., pf.	100	100	100
Congoleum-Nairn Co.	21⅜	20⅜	21
Container Corp. of America	11⅜	10⅛	11
Continental-Diamond Fibre Co.	6¼	5⅞	5⅞
Crown-Zellerbach Co.	10⅞	10⅛	10¾
Crown-Zellerbach Co., pf.	77	75	76
Flintkote Co.	19⅝	17½	18⅝
Robert Gair	2⅝	2½	2⅝
Robert Gair, pf.	9¼	8¾	8¾
International Paper & Power	8¾	7½	7⅞
International Paper & Power, pf.	31⅞	27⅞	29¼
Johns-Manville Corp.	73	69	71
Johns-Manville Corp., pf.	126¾	126¾	126¾
Kimberly-Clark Corp.	21	21	21
MacAndrews & Forbes	28¾	28¾	28¾
Masonite Corp.	41	38½	39½
Mead Corp.	8½	8½	8½
Paraffine Companies, Inc.	41½	41½	41½
Rubberoid Co.	21¼	19	19
Scott Paper Co.	47	45¾	46
Sutherland Paper Co.	26	25¼	26
Union Bag & Paper Corp.	8¾	7⅞	8¾
United Paperboard Co.	4½	4⅛	4½
U. S. Gypsum Co.	81½	79	80½

New York Curb Exchange

High, Low and Last for the Week Ending April 19, 1939

	High	Low	Last
American Box Board Co.	6¼	6⅛	6⅛
Brown Co., pf.	11½	10½	11
St. Regis Paper Co.	2¼	2	2¼
St. Regis Paper Co., pf.	40¾	40¾	40¾
Taggart Corp.	3¼	3	3

Union Bag Profits To Exceed $110,000

First quarter earnings of Union Bag and Paper Corporation will probably exceed $110,000, it was estimated by Alexander Calder, president, at the annual meeting of stockholders in Jersey City last week. All the present directors of the corporation were reelected for a term of one year. Sixty-nine per cent of the company's capital stock was voted, with no dissenting vote.

"The year 1939 started out with a much healthier market tone," Mr. Calder said, "and we are today receiving approximately 10 per cent higher prices for our major products. Your company's shipments for the first quarter were a little below the 1938 average, but this is the natural result of hesitancy on the part of the trade in buying at the higher price levels, and is a deliberate investment toward the securing of higher prices for the balance of the year."

Referring to the dividend outlook, Mr. Calder said that distribution to stockholders this year would depend largely on the effect of the price structure and the world situation on profits over the next few months. Because of the recent financing program, previous restrictions on dividend payments have been modified. Under existing insurance company loan agreements, dividend payments may be made so long as current assets exceed current liabilities by $3,000,000. The present excess is approximately $3,200,000, Mr. Calder said.

Lily-Tulip Cup Nets $206,028

The Lily-Tulip Cup Corporation and Subsidiaries reports as follows for 1938: Net profit, $225,062, after $206,028 deduction for hurricane loss, equal to $1.18 each on 189,539 shares of no-par capital stock. Net profit in 1937 was $341,409, or $1.80 a share. Current assets as of Dec. 31, 1938, including $664,819 cash, amounted to $2,077,913 and current liabilities, including $200,000 bank notes payable, were $595,506, comparing with cash of $121,179, current assets of $2,104,971 and current liabilities, including $500,000 notes payable, of $972,245 at end of preceding year. Inventories were $873,345, against $1,549,668.

Complete Another Step in I. P. Plan

WASHINGTON, D. C., April 18, 1939—The Securities and Exchange Commission has announced that another step in the plan of International Paper and Power Company to divest itself ultimately of its utility interests has been completed.

The agreement under which Frank D. Comerford, Sidney F. Thaxter and Robert H. Montgomery as trustees in the voting rights of 88.16 per cent of the outstanding common shares of New England Power Association has been terminated, according to the SEC. The shares now revert to International Hydro-Electric System.

Continental-Diamond Loses $616,154

Continental-Diamond Fibre Company and Wholly Owned Subsidiaries reports as follows for 1938: Net loss, $616,154, compared with 1937 net profit of $275,561, equal to 60 cents each on 456,000 capital shares. Current assets as of Dec. 31, 1938, including $328,141 cash, amounted to $2,722,974 and current liabilities were $395,049, compared with cash of $755,438, current assets of $3,515,604 and current liabilities of $517,823 at end of preceding year. Inventories were $1,852,302, against $2,200,845.

Dixie-Vortex Profits Slightly Less

Robert C. Fenner, president of the Dixie-Vortex Company, at the annual meeting said that the net profit in the first two months was slightly under the like period of 1938. Sales for the first quarter were almost exactly equal the like period of last year in dollars, while tonnage was higher. Selling prices on the whole are somewhat lower than a year ago with rather severe price cutting in cone-cut lines.

Quebec Pulp Net Loss $238,355

The Quebec and Paper Corporation and Subsidiaries report for 1938 a net loss before depreciation of $248,454, against $238,355 loss on the same basis the year before.

WANT TO SAVE...

STOCK? The big, new Bird Save-All has the capacity and the efficiency to get the fibre and filler out of the white water.

WATER? The big, new Bird Save-All permits an honest-to-goodness closed system; puts the water in shape for immediate re-use.

TIME? The Bird Save-All is ideal for use on machines making short runs — a simple, low-volume, closed system that makes for rapid changes and close control.

MONEY? First cost, installation cost and operating cost are so low that a Bird Save-All system assures highest net return per pound of fibre and gallon of water recovered . . . It's easy to figure just what this big, new Save-All can save you. We'll gladly work it out for you if you'll say the word.

BIRD MACHINE COMPANY, SO. WALPOLE, MASS.

BIRD SAVE-ALL

Joint Committee To Open Paper Bids May 15

Specifications Call For 42,707,000 Pounds of Paper For Use of the Government Printing Office For the Six Months Period Beginning July 1—Committee Will Meet One Week Later To Consider Making of Awards.

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 19, 1939—Bids will be opened by the Joint Congressional Committee on Printing on May 15 for 42,707,000 pounds of paper for use of the Government Printing Office for a six months period effective July 1 next. At the last opening the quantity was for 41,000,000 pounds. Bids will be opened at the same time for the annual supply of envelopes. The Joint Committee will meet one week later to consider the making of awards.

Committee Makes Report

The Paper Specifications Committee of which Ansel Wold is chairman last week made the following report to the Joint Committees:

The Committee on Paper Specifications respectfully submits its Thirty-seventh Report and the accompanying recommended schedule for paper for the public printing and binding and blank paper for the use of the Government departments and establishments in the District of Columbia for the term of 6 months, beginning July 1, 1939.

Paragraph 68 of the Instructions under the heading "Packing" has been revised so as to include the weight of wrappers and fiber cores in the net weight of newsprint paper in order to accord with commercial practice.

LOT 1—Newsprint paper.—A statement has been added to the text of this lot emphasizing the inclusion of the weight of wrappers and cores in the net weight.

LOT 16—Offset book.—In view of certain difficulties experienced in printing upon offset book paper a requirement has been added to the specifications that the paper should be free from lint, fuzz, and loose particles which will pick or lift under normal press conditions.

LOTS 26 TO 31 INCLUSIVE—Supercalendered book.—The requirements for opacity of the 100-, 120-, and 140-pound paper were modified to more closely correlate them with the respective weights. Former Lot No. 27 which included both 90- and 100-pound supercalendered book has been divided into two lots so that the 90-pound is now Lot No. 26 and the 100-pound is Lot. No. 27.

LOT 54—Sulphite white writing paper.—Substance No. 26 has been added to the schedule in order to meet the requirements of the Government activities.

LOTS 64 TO 67 INCLUSIVE AND LOT 69—Map paper and chart paper.—The moisture content for these lots has been changed from a definite percentage so as to require that it be in equilibrium with an atmospheric condition of 50 per cent relative humidity.

LOTS 190 TO 193 INCLUSIVE—50 per cent rag index.—The bursting strength requirement of the 362-pound paper has been reduced from 120 to 110 points in order to conform with the best manufacturing practice.

LOTS 276 AND 277—Calendered tag.—A requirement has been added so as to control the paper acidity. The bursting strength has been increased from 50 to 60 points and the ash decreased from 7 to 5 per cent, in order to obtain more permanent and durable paper for the printing of tabulating cards. An ageing requirement has also been included.

LOT 280—Jute tag.—In order to obtain more durable paper, the bursting strength has been superseded by a tearing strength and a minimum acidity requirement has been added. Provision has also been made for writing and erasing qualities.

LOTS 351 AND 352—Pressboard colored. — The bursting strength in Lot 351 has been increased from 120 to 140 pounts; and in Lot 352 from 250 to 300 points, in order to obtain a board of better quality.

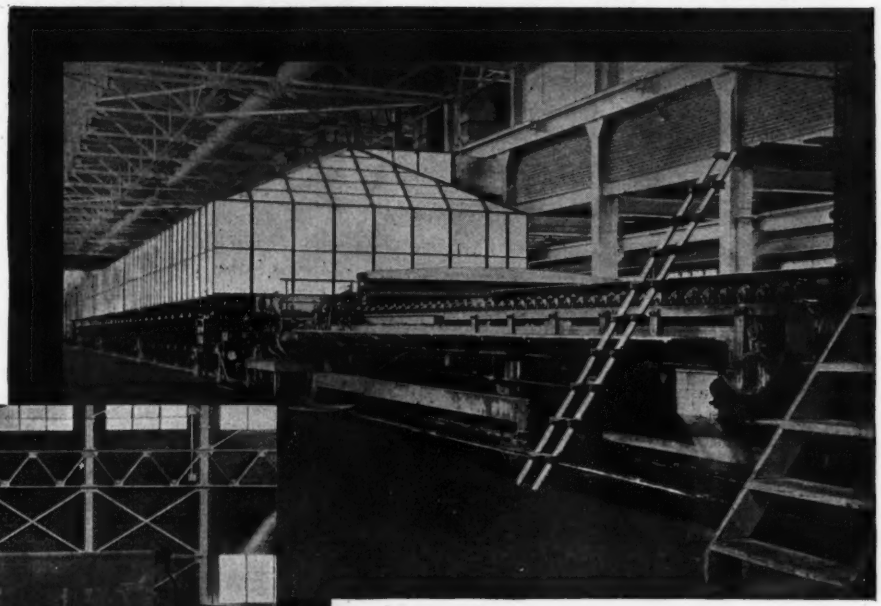
This schedule embraces 169 lots, which is 2 more lots than the preceding schedule. The quantity estimated for the term of 6 months beginning July 1, 1939, is approximately 42,707,000 pounds, as compared with 41,000,000 pounds for the previous contract period of 6 months.

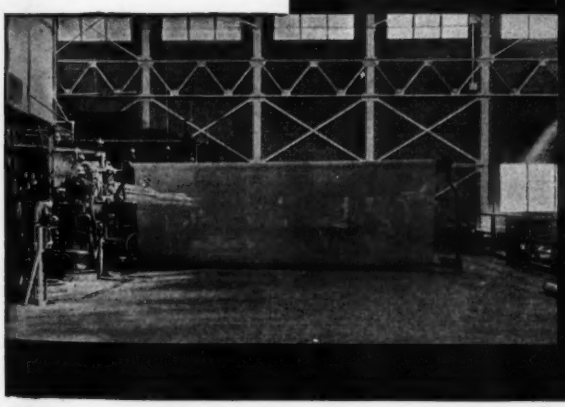
Papers Called For

The approximate estimated quantities of paper comprise:

600,000	pounds newsprint paper.
3,561,000	pounds machine-finish book paper.
400,000	pounds antique book paper.
400,000	pounds off-set book paper.
80,000	pounds lightweight machine-finish book paper.
330,000	pounds 50 per cent rag antique book paper.
20,000	pounds 75 per cent rag laid antique book paper.
20,000	pounds 100 per cent rag antique book paper.
2,430,000	pounds supercalendered book paper.
520,000	pounds coated book paper.
30,000	pounds lithograph paper.
4,020,000	pounds mimeograph paper.
400,000	pounds U S M O safety writing paper.
8,000	pounds U S M O writing paper.
4,000	pounds safety writing paper.
8,182,500	pounds writing paper.
490,000	pounds map paper.
1,315,000	pounds manifold paper.
6,642,000	pounds bond paper.
786,000	pounds ledger paper.
1,145,000	pounds index paper.
2,500	pounds tissue paper.
300,000	pounds cover paper.
540,000	pounds manila paper.
755,000	pounds kraft paper.
1,500	pounds paraffin paper.
400,000	sheets gummed paper.
138,000	pounds blotting paper.
2,500	pounds stereotype molding paper.
20,000	pounds oiled manila tympan paper.
3,000	pounds plate-wiping paper.
3,000	pounds back-lining paper, for case making.
7,000	pounds high finish red sulphite.
110,000	pounds manila tag board.
1,550,000	pounds calendered tag board.

THE BELOIT *Removable Fourdrinier*





● Wire is strung in aisle while machine is in operation, if desired.

● Fourdrinier pit can be washed out while wire is being installed.

● Wire bundle is taken from shipping box and mounted directly in carriage—no chucks to apply—no further handling as bundle is unreeled as carriage moves along to form wire loop.

● All wire poles are mounted in carriage before loop is formed. Inside poles are inserted inside the wire.

● Safest — most convenient — quickest method of installing Fourdrinier wire.

THE BELOIT WAY IS THE MODERN WAY

BELOIT IRON WORKS PAPER MACHY BELOIT, WIS. U.S.A.

30,000 pounds manila cardboard.
135,000 sheets railroad board.
420,000 pounds bistol board.
6,000,000 pound United States postal card bristol board.
30,000 sheets pressboard.
5,000 pounds news board.
1,005,000 pounds chip and strawboard.
15,000 pounds marble grained board.
36,000 pounds box board.
380,000 pounds binder's board.

In cases where more than 1,000 reams are called for, proposals will be received for 1,000 reams or more.

Employees Called For

Bids will also be received for the following envelopes:

70,000,000 Light-brown (Kraft Shade).
11,630,000 Writing, Sulphite, White and Colored.
255,000 100 Per Cent Rag Writing White and Colored.
126,000 100 Per cent Rag Ledger, White.
1,802,000 Bond 50 Per Cent Rag, White.
344,000 Bond, 100 Per Cent Rag, White.

Indianapolis Demand Stationary

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., April 17, 1939—Unseasonal cold weather for three days followed by torrential rains the last of the week did not aid the paper business in the last seven days. However, volume keeps on about the same as usual in the fine paper field, but it has not increased as the trade thought it would by this time. There is some call for ledgers, bonds and book paper and the chief characteristic of the trade is the steadiness of the business rather than the extensiveness of volume. Prices are being held firm and there is no apparent disorganization to the market.

In the common paper field there is a fair demand, but it should be better, according to jobbers. Wrapping paper is in fair demand and there has been a good volume for bags during the last two weeks. The laundry and dry cleaning trade has increased its orders somewhat. Local jobbers say the price situation is well stabilized and that if there are no digressions, they should make some money with the present volume. Tissues continue to move well. The entire common paper field is in better condition than it was a year ago.

Demand continues also for summer specialties and there are indications of a good year. Box manufacturers say there has been little change, but they are not discouraged and point to a gradually widening of the consumer base to substantiate their views. Demand for waxed containers is improving with the proximity of summer and an early spurt of buying by the ice cream and dairy trade.

Building paper demand for spring has opened in a big way. This week many distributors of roofing have exhibits at the annual Home Complete Exposition here and are reporting wide interest. Construction has begun early and should continue through the season. Dealer stocks are only in fair shape.

Cellophane and waxed papers are moving in fair quantities. A good business is reported in the bakery industry for both cellophane and waxed papers, business having improved since Easter.

Relief From Dumping and Depreciated Currency Competition

BY O. M. PORTER, MANAGER UNITED STATES PULP PRODUCERS ASSOCIATION

There seems to be some considerable misunderstanding as to just what the domestic pulp sellers are doing in the matter of attempting to obtain relief from:

a. The "dumping" of abnormally low-priced pulps into the American market, and

b. Depreciated European currency competition.

The Industry's activities are being directed toward relief from present abnormal conditions of import competition due to depreciated European currencies, the "dumping" in this market of "cheap" foreign pulps and restrictiions on opportunities for competitive selling in world markets—in other words, toward a restoration of free-trade competition. In these efforts, the Industry fully recognizes its obligations to buyers of pulp as well as to its employees and stockholders, and to the Government.

The domestic Pulp Industry is convinced that this program is sound and that it is in the interest of the American Paper Industry as well as the American Pulp Industry. It also believes that the maintenance of the present Pulp Industry and the necessity for reasonable expansion of domestic pulp mills in the event of any major national emergency must not be overlooked, and that support of its efforts along the lines noted above should be accorded it by the Government of the United States without delay.

Editors Tour E. T. L. Plant

Open house in the Electrical Testing Laboratories' new building at 79th street and East End avenue, New York City, was held Tuesday, April 11, for the editors of technical and business publications in New York. The program included a tour about the building and a house warming. Those who brought cameras along had checks of shutter speed done gratuitously.

E. T. L., in business over forty years, has—since 1908—furnished facilities for making examinations and tests on paper and its allied products. Since E. T. L. performs independent investigations, truly impartial reports are worked out for manufacturers and users of paper and for those firms interested in paper's affiliated commodities.

Effect of Adhesive on Strength Characteristics of Corrugated Fiber Board

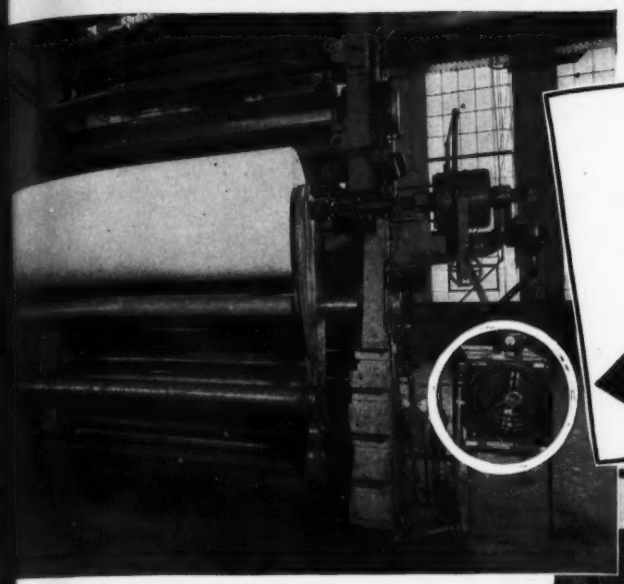
The item on the "Effect of Adhesive on Strength Characteristics of Fiberboard" which appeared in the issue of the PAPER TRADE JOURNAL of April 6 was incomplete for the reason that copies of this article may also be obtained from E. I. Du Pont de Nemours & Co., Wilmington, Del.; Philadelphia Quartz Company, Philadelphia, Pa. and Standard Silicate Division of the Diamond Alkali Company of Pittsburgh, Pa.

The bulletin was prepared by the Department of Engineering Research, University of Michigan, Ann Arbor, Mich.

A SUPERCALENDER DRIVE

FOR PAPER-MILL MEN SEEKING RELIABLE, EFFICIENT OPERATION

AS EASY AS STEERING YOUR CAR



Supercalender and control station for generator and driving motor. Consolidated Water Power & Paper Co.

THIS type of high-speed supercalender drive, with "steering-wheel" adjustment, is literally as easy to operate as it is to steer your car on a smooth highway.

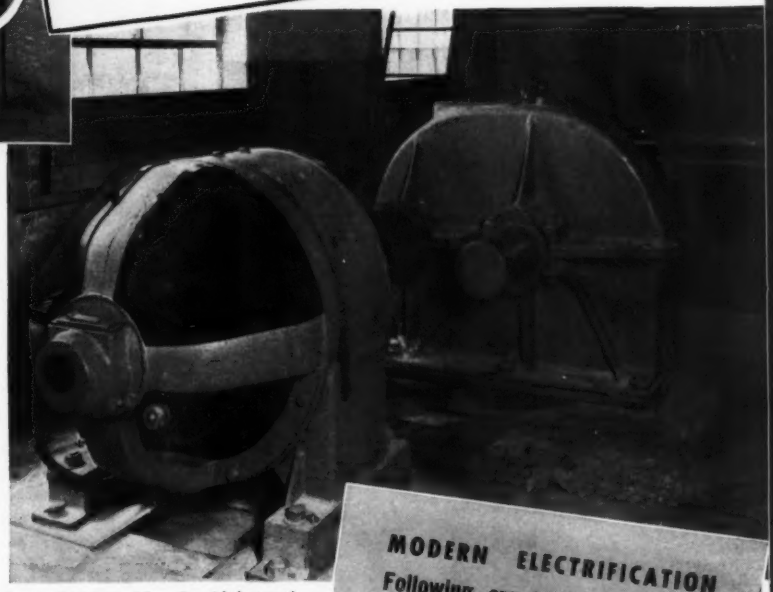
TURN WHEEL FOR ALL SUPERCALENDER FUNCTIONS

With this system, all functions of the supercalender—starting, threading, accelerating, slowdown, stopping—are at the immediate control of the person at the wheel of the rheostat. Rate of acceleration and deceleration are under the direct control of the operator, and are adjustable to suit the requirements of the paper being calendered. For additional convenience, during threading, the supercalender can be started or stopped from several push-button stations located around the machine. A wide range of speeds is available. Five such drives have been applied with conspicuous success in mills of one of the leading midwestern paper companies. This application has been developed in collaboration with the paper company engineers.

ADJUSTABLE-VOLTAGE CONTROL

For indication of the load, the operator has only to read the ammeter mounted on the top of the rheostat. In addition to watching the sheet of paper, the operator can use the ammeter as an indicator of the accelerating, decelerating, or braking load. Speed changes of the drive are effected through field adjustment of the generator and d-c driving motor. Turning the handwheel changes the intensity of the fields. This is one of the numerous adaptations of d-c adjustable-voltage control, devised by General Electric for modern requirements of industry.

For information on this or any other drive refer to the G-E office near you, or write General Electric Company, Schenectady, N. Y.



A single-motor drive for high-speed supercalenders. G-E adjustable-speed d-c motor driving 1200-fpm supercalender through reduction gear.

MODERN ELECTRIFICATION

Following are ten modern applications of electricity to paper mills, devised especially by General Electric to improve productive efficiency.

1. Automatic tension control
2. Turbines with 3-arm governing mechanism
3. Progressive draw adjustment
4. Turbines with wide-range electric governors
5. Adjustable-voltage winder drives
6. Sectional paper-machine drives
7. Selsyn draw adjustment from front of paper machine
8. High-speed voltage regulators
9. Photoelectric register control
10. Direct-connected chipper motors

GENERAL ELECTRIC

011-473

Obituary

John C. Kennedy

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., April 17, 1939—John Curtin Kennedy, for more than half a century associated with Carter, Rice & Company and treasurer of the corporation at the time of his retirement in 1929, died April 9 at the New Bedford Hotel, New Bedford, Mass., where he had been living since his return to that city, in which most of his relatives resided, in 1932. Mr. Kennedy, a native of New Bedford, born in 1857, the son of the late Michael F. and Ellen Ahearn Kennedy, was 82 years old. He had been in failing health for the past year.

Mr. Kennedy was a member of the New Bedford

JOHN C. KENNEDY

High School Class of 1878 and in 1877 came to Carter, Rice & Company, entering a business connection which lasted 52 years. He was widely and favorably known in the paper trade. He was associated with the Nashua Gummed & Coated Paper Company, Nashua, N. H., and was treasurer of the National Bread Wrapping Machinery Company, also of Nashua. Occasionally, he came to Boston to visit the offices of Carter, Rice & Company and of the Nashua Gummed & Paper Company in that city.

For many years Mr. Kennedy was credit man for Carter, Rice & Co., and in that capacity was regarded as a wonderful judge of character, with an ability for sifting facts to arrive at the true situation. He was generally acknowledged as the best credit man in the new England paper trade.

Within two weeks before he died, Vice-president Hubert L. Carter, J. E. Giles and Harry E. Ellis, all of Carter, Rice & Company, called on Mr. Kennedy.

The funeral was held from the residence of his nephew, F. Goddard Kennedy, 98 Madison street, New Bedford, of Kirwin & Kennedy, paper merchants, that city, on April 12. There was a solemn high mass of requiem at St. Lawrence Church. Those who attended from Carter, Rice & Company were Mr. and Mrs. Carter, E. J. Canning, E. A. Crowell, E. P. Dudley, Miss M. L. Dwyer, Harold Jefferson, Miss Mary G. Leary, James T. McGowan, George McLaughlin, Frank C. Perkins, Robert H. Welsh and Frank H. Winter.

Mr. Kennedy was never married. A sister, Mrs. M. T. Hudner, of Fall River, Mass., and several nephews and nieces are living.

Charles A. Gardner

Charles A. Gardner, 64, treasurer of the Taylor-Logan Paper Company, died April 9 in his home, 41 Wolcott street, Holyoke, Mass., after a short illness.

Born in South Hadley Falls, he was a resident of Holyoke for many years. He was the son of Leroy F. and Lucey (Kingsley) Gardner. For several years he was employed in the office of the Lyman Mills and the Massachusetts Mutual Life Insurance in Springfield.

Joining the Taylor-Logan Company 30 years ago, he served as its treasurer. He was a member of the Mt. Nonotuck Lodge of Masons, holding the office of treasurer, and of the Second Baptist Church. At one time he was active in the social life of the city.

Surviving are his wife, two daughters, two sisters, one brother and four grandchildren.

Chester D. Rockwood

Chester D. Rockwood, 49, president of the Union Selling Company, general paper merchants, Cincinnati, O., died April 7 after a few weeks' illness.

Mr. Rockwood became ill in Florida six weeks ago and went to Cleveland for treatment at Mount Sinai Hospital, where his brother, Dr. H. L. Rockwood, is superintendent. He was a member of the Hermitage and the Maketewah Country Club.

Surviving are his widow, a son Chester, Jr., and a daughter Susan.

William Donald Dean Agnew

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., April 17, 1939—William Donald Dean Agnew, 57, managing director of the Vancouver Pacific Paper Company, Vancouver, B. C., died recently at his home after two weeks illness. He had been in poor health for some time previous.

Mr. Agnew was born in Lucknow, Ont. and came to Vancouver in 1908. He took a prominent part in the business life of his city, and served as chairman of the wholesale bureau of the Vancouver Board of Trade. He was an active member of the Board for many years, and also prominent in Rotary and Masonic circles.

In addition to his wife Mr. Agnew is survived by a son, daughter and two brothers.

Paper Machine Hoods

In Bulletin No. 17, just issued by the J. O. Ross Engineering Corporation, 350 Madison avenue, New York, the merits of the Ross paper machine hoods are described. As about 60 tons of air are required to remove the water evaporated by the dryers per ton of paper, concentration of the vapor by a well designed hood cuts down the amount of heat required for ventilation and drying. It is also stated that proper hooding produces cleaner paper by providing cleaner, drier and lighter machine rooms, and reduces the deterioration of roof and walls by promoting more rapid and economical drying.

Government Paper Bids and Awards

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 19, 1939—Stanford Paper Company has been awarded the contract for furnishing the Government Printing Office with 10,250 pounds (100,000 sheets) of 75 per cent rag, 30 x 40 lithograph finish map paper at 11.49 cents. Virginia Paper Company will furnish 3,449 pounds (15,750 sheets) of 50 per cent rag, 25 x 52 white coated book paper at 12.75 cents. Bids for these items were received on March 29.

National Pulp and Paper Company will furnish 300,000 pounds of newsprint paper in 48 inch rolls at 2.425 cents and 200,000 pounds of same at 2.95 cents. Barton, Duer & Koch Paper Company, will furnish 400,000 pounds of manila calendered tag board in 23¼ and 26½ inch rolls at 6.9 cents. Stanford Paper Company will furnish 5,000 sheets of 22 x 28, 4 ply green railroad board at $28.99 per M sheets. Cauthorne Paper Company will furnish 40,000 pounds of yellow sulphite writing paper in 32 inch rolls and Perkins-Goodwin Company will furnish 74,800 pounds (800,000 sheets) of 32 x 42 white sulphite writing paper at 5.35 cents. Bids for all of these items were received on March 27.

Whitaker Paper Company will furnish 2,000 sheets of 24 x 36 Quaker drab cloth lined cover paper at $146.68 per M sheets, bids for which were received on March 24.

National Pulp and Paper Company will furnish 160,000 pounds of newsprint paper in 32 inch rolls at 2.425 cents, bids for which were received on March 17.

Maxwell Paper Company will furnish 40,000 pounds of 25 x 38 offset book paper at 5.77 cents and R. P. Andrews Paper Company will furnish 4,000 sheets of 20 x 30 white tissue paper at $2 per ream.

The Printing Office has received the following bids for 1,000 pounds of red stereotype molding paper in 24 inch rolls; Russell Products Company, 15 cents; Cauthorne Paper Company, Inc., 14 cents; and Stanford Paper Company, 15 cents.

For 45,000 pounds (600,000 sheets) and 22¼ x 32¼ M. F. book paper: Fitchburg Paper Company, 4.56 cents; Mudge Paper Company, 4.76 cents; Perkins-Goodwin Company, 4.61 cents; John F. Post, Inc., 5.29 cents; Stanford Paper Company, 4.6 and 4.75 cents; Barton, Duer & Koch Paper Company, 4.59 cents; R. P. Andrews Paper Company, 4.75 cents; Whitaker Paper Company, 4.92 cents; Cauthorne Paper Company, 4.72 cents; Marquette Paper Company, 4.74 cents.

For 6,000 sheets of 22 x 28 blue railroad board: Barton, Duer & Koch Paper Company, $28.66 per M sheets; Old Dominion Paper Company, $31.49; Stanford Paper Company, $28.99; Whitaker Paper Company, $30.55; Virginia Paper Company, $31.00; Paper Corp. of U. S., $30.55; Mudge Paper Company, $30.55; Mathers-Lamm Paper Company, $30.55; and Walker, Goulard Plehn Company, $30.55.

For 1,275 sheets of 20 x 25 green gummed paper: Cauthorne Paper Company, $9.90 per M sheets; Virginia Paper Company, $21.00; Whitaker Paper Company, $12.00; R. P. Andrews Paper Company, $14.00; Stanford Paper Company, $15.00; Mathers-Lamm Paper Company, $9.00; and Mudge Paper Company, $9.60.

PULP SALES CORPORATION

230 PARK AVENUE
NEW YORK, N. Y.

REPRESENTATIVES IN U. S. A. AND MEXICO
OF THE
FINNISH CELLULOSE ASSOCIATION
HELSINGFORS, FINLAND

FINNISH WOOD PULP UNION
HELSINGFORS, FINLAND

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Financing and Operation of Pulp and Paper Mills

General Construction News

Pulaski, N. Y.—The Regal Paper Company, manufacturer of tissue and kindred paper stocks, has plans in progress for new addition to mill, to be two-story, 60 x 125 feet, reported to cost over $60,000, with equipment. It is proposed to begin erection this spring. C. H. Fournier, East Mohawk street, Oswego, N. Y., is engineer.

Watervliet, Mich.—The Watervliet Paper Company, manufacturer of coated papers, card stocks, etc., plans remodeling and improvements in machine department, including modernization of one of existing paper-making machines for considerable increase in present capacity. Cost reported close to $25,000. Work is scheduled to begin soon. Plant is now running on a capacity production basis and will continue on such schedule for an indefinite period.

Los Angeles, Cal.—Fire recently damaged a portion of plant of the Allen Paper Box Company, 3228 Mines avenue, East Los Angeles, manufacturer of paper boxes and containers. An official estimate of loss has not been announced but is reported as slight. The damage will be replaced.

Martinsville, Va.—The Fibre Board Container Company, manufacturer of corrugated fiber boxes and containers, has begun construction of new addition to plant and will push work to early completion. As recently noted in these columns, new unit will be one-story, 80 x 250 feet, and is reported to cost approximately $70,000, including equipment. George D. Mitchell, Martinsville, has general contract for erection.

Philadelphia, Pa.—The United Container Company, 12th and Carpenter streets, manufacturer of corrugated paper boxes and containers, has arranged for lease of portion of Building No. 1 at the Fleisher Industrial Center, Twenty-sixth and Reed streets, formerly used for textile mill service, and will occupy for plant. The space totals about 15,000 square feet and will provide for expansion in production, storage and distribution. Company will take possession at once.

Port Clinton, Ohio—The Celotex Corporation, 919 North Michigan avenue, Chicago, Ill., manufacturer of wall board, insulating materials, etc., will increase its line of output to include gypsum board and allied products in connection with acquisition of the American Gypsum Company, Port Clinton, as consummated recently. Large production schedule is planned. Gypsum board specialties will be manufactured under patents of the United States Gypsum Company, Chicago, for which the Celotex Corporation has secured a license.

Plymouth, N. C.—The North Carolina Pulp Company, manufacturer of sulphate fiber products, has plans maturing for new addition to local mill and is said to be planning to begin erection at early date. The new unit will be equipped for bleached pulp and will comprise several buildings to cost close to $800,000, including machinery. Company is a division of Kieckhefer Container Company, Delair, N. J., which has chartered the Cherry River Paper Company under Delaware laws to take over and operate the company of same name at Richmond, W. Va., recently acquired. It is proposed to use a considerable part of the bleached pulp production of the Plymouth mill at the Richwood plant. As previously noted in these columns, company also is arranging for a housing development at the Plymouth mill, to consist of a series of dwellings to accommodate approximately 150 workers at the plant.

Rockingham, N. C.—The Southern Tissue Mills, Inc., Rockingham, recently organized, is perfecting plans for early establishment of new local mill for the manufacture of tissue and kindred paper stocks. Facilities and equipment will be provided for large capacity. Company has completed arrangements with the Mumford Paper Mills, Inc., Mumford, N. Y., to take over certain equipment and machinery at that plant and remove to new mill at Rockingham, where additional equipment will be installed. Program is scheduled to be carried out at early date. The Southern Tissue Mills, Inc., have taken over the former plant of the Midway Textile Company at Rockingham, which will be remodeled and improved for the new paper mill. Output will include tissue napkins, towels and allied specialties. New company is headed by P. L. McCall and C. K. Dunlay, both of Hartsville, S. C.

New York, N. Y.—The United States Announcement Card Company, Inc., 17 East 22nd street, card stocks, etc., has leased a floor in building at 116 West Fourteenth street, and will occupy paper-converting plant. It is proposed to remove present establishment to new location, where increased facilities will be provided.

Savannah, Ga.—The Union Bag and Paper Corporation, Woolworth Building, New York, N. Y., is running on a seven-day week schedule at sulphate pulp and paper mills at Savannah, used for the production of kraft wrapping and bag papers, and proposes to continue on such basis for an indefinite period. At its branch mill at Hudson Falls, N. Y.,

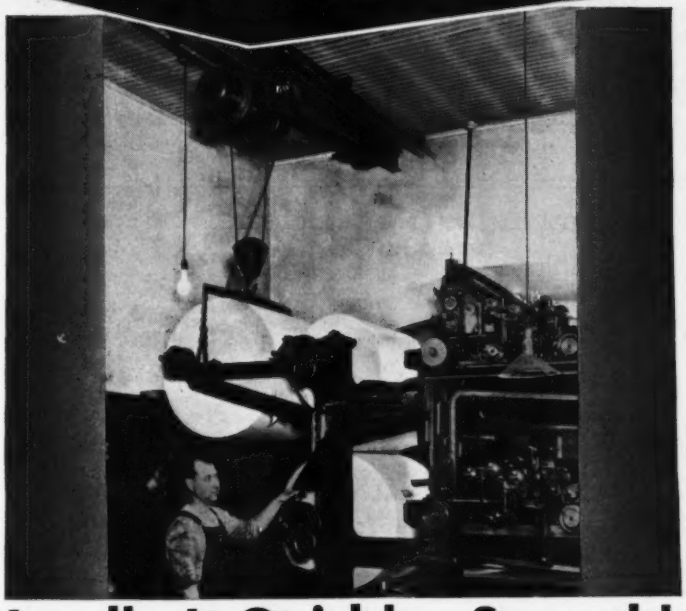
the company has adopted a six-day production schedule, similarly to continue indefinitely.

Rome, Ga.—The Tubize Chatillon Corporation, 2 Park avenue, New York, manufacturer of cellulose rayon products, has begun erection of new addition to mill at Rome, recently referred to in these columns, and will push work to completion at earliest date. It will be one-story, 147 x 174 feet, reported to cost in excess of $85,000, including equipment. A fan room for air-conditioning system at mill also will be installed. A. R. Watson, Birmingham, Ala., has secured contract for structural steel framing for new unit; roofing and other sheet metal work will be carried out by the Sanford Company, 666 Greenwood avenue, Atlanta, Ga. General erection contract has been awarded to the Batson-Cook Company, Inc., West Point, Ga. Robert & Co., Bona Allen Building, Atlanta, are architects and engineers.

Easton, Pa.—The Dixie-Vortex Company, 421 North Western avenue, Chicago, Ill., manufacturer of paper cups, has begun production of paper milk bottles under a limited manufacturing schedule at its mill at Easton, and is carrying out operations for this new specialty in an experimental way, prior to regular commercial production, as now proposed in the future.

San Francisco, Cal.—The Eastman Kodak Company, 241 Battery street, San Francisco, manufacturer of photographic and other processed papers, films, etc., has asked bids on general erection contract for two-story addition to local branch plant, to be used primarily for storage and distributing service. Cost reported over $50,000, with equipment. Proposed to award general erection contract and place work under way at early date. Bliss & Fairweather, Hobart Building, San Francisco, are architects. Main offices of company are at Kodak Park, Rochester, N. Y.

P&H HEVI-LIFT HOISTS



Handle It Quickly—Smoothly
"THRU THE AIR"

● You'll find many places where paper is handled in heavy units — around the mill, warehouse, converting or printing plant — where the job can better be done with P&H Hevi-Lift Hoists. You can have effortless movement — at any desired speeds — without damage to loads when you handle it "thru the air" with P&H hoists. Let us suggest the most practical method for your needs. Why not see how others are doing it? Ask us to send Bulletin H-5. The Harnischfeger Corporation, 4560 West National Avenue, Milwaukee, Wisconsin.

HARNISCHFEGER CORPORATION
HOISTS • WELDING ELECTRODES • MOTORS P&H EXCAVATORS • ELECTRIC CRANES • ARC WELDERS

New Companies

New York, N. Y.—The Hospital Paper Products Corporation has been organized with capital of 200 shares of stock, no par value, to deal in special paper products. New company is represented by Benjamin E. Winston, 270 Broadway, New York, attorney.

New York, N. Y.—The Hi-Speed Envelope Company, Inc., has been incorporated with capital of $10,000, to manufacture and deal in envelopes and other commercial paper products. New company is represented by Israel G. Seeger, 11 Broadway, New York, attorney.

Sunderland, England—The Hendon Paper Mills, Ltd., near Sunderland, has plans nearing completion and will soon place contract for construction of new additions to plant, to provide for large increase in present capacity. It is proposed to begin erection during the spring. Cost is reported over $150,000, including equipment.

Geo. C. Andrews Convalescing

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., April 17, 1939—George C. Andrews, sales manager of the Monadnock Paper Mills, is convalescing at the Faulkner Hospital, after an operation.

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COMING EVENTS IN PAPER INDUSTRY

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, Fall Meeting, Syracuse Hotel, Syracuse, N. Y., September 12-14.

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—Second Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

AMERICAN PULP AND PAPER MILL SUPERINTENDENTS ASSOCIATION, Annual Convention, Wardman Park Hotel, Washington, D. C. June 13-15.

FIRST ANNUAL SOUTHERN PAPER FESTIVAL, Savannah, Ga. April 16-19.

NATIONAL SAFETY COUNCIL, PAPER AND PULP SECTION, Annual Meeting, Atlantic City, N. J. October 16-20.

PRICES AND RECOVERY

A fair level of prices is an essential factor in business recovery. This was given some emphasis in a statement by the board of governors of the Federal Reserve System on March 12, disapproving any legislation to maintain the level of the year or any given price level. In an earlier report in March to the Temporary Economic Committee, the Federal Trade Commission held a similar opinion. In his message to Congress last spring, President Roosevelt said in part: "One of the primary causes of our present difficulties lies in the disappearance of price competition in many industrial fields, particularly in basic manufacture where concentrated economic power is most evident, and where rigid prices and fluctuating payrolls are general." Mr. Roosevelt also said, "that the Government seeks a balanced system of prices such as will promote a balanced expansion in production."

In a study made by the Department of Labor and the Treasury Department a short time prior to the President's "anti-monopoly" message, a close correlation was shown between the fluctuations of the more sensitive prices, consisting in most part of agricultural products, and changes in factory employment. In commenting on several aspects of the price problem *The Guaranty Survey* of March 27 said in part: "Any assumption regarding causal relationships between prices and production of the less sensitive commodities also arouses serious doubts. A recent study by the National Industrial Conference Board of the relation between price changes and variations in output of 264 commodities between 1929 and 1933 led to the conclusion that 'no simple and clear-cut relationship prevails between specific commodity price and production changes.' Even if such a relationship could be clearly established, it would leave the ultimate questions of cause and effect unanswered. Commodity prices fall into many different groups, there are wide differences in the conditions affecting demand and supply. The degree of competition or of 'concentration of economic power' that may exist with respect to any particular commodity is only one of these many differences."

In considering the possible causes of price rigidity *The Guaranty Survey* said in part: "A glance at business and economic developments in recent years shows that many factors other than 'concentration of economic power' have tended to interfere with the price elasticity that is apparently regarded as desirable. Some of these factors are governmental in origin. In the very early days of the depression the Federal Government used its influence to prevent reductions in wage rates and secured pledges from many industrial executives that no such reductions would be made. The result was that unit labor costs were temporarily 'frozen' at the existing levels and that business concerns were reluctantly forced to lower the aggregate of these costs by the only means left available to them, reducing employment. This, in turn, threw the bulk of labor's share of the depression burden on a selected group consisting of those who had lost their jobs, instead of distributing the loss more lightly over a larger section of the population. . . . In recent years this influence has taken more tangible form in the National Labor Relations Act, the wage and hour law, and other legislation tending to promote wage inflexibility.

"The tax costs of business have, of course, been enormously increased in the last few years. Tax rates on incomes have been raised, and social security taxes, undistributed profit taxes, and processing taxes imposed. Undistributed profits taxes, it is true, have been greatly reduced and processing taxes outlawed by the courts. In the meantime, however, Federal, State, and local governments have raised the rates of existing taxes and imposed new levies on a long list of items. In most sections of the industrial field, competition still appears to be a very potent force. The tendency of industrial output to respond promptly to variations in demand is probably due more largely to the progress that has been made in gauging markets than to a growth of monopolistic control, and it is an open question whether this prompt adjustment of supply is not more desirable from a broad economic point of

view than a slower adjustment resulting in overproduction and drastic price recession. As far as prices themselves are concerned, business men generally would gladly expand the markets for their products by reducing prices if they could do so without wiping out their profit margins. In the final analysis, the problem of prices, in so far as it is related to business recovery, is largely a problem of costs. Competition that tends to reduce or hold down prices can be blocked by unyielding cost factors. If costs can be reduced, both prices and production can be relied upon to respond.

In his address to members of the Paper Distributing Trade at the Convention of the Paper Trade Association of the United States, last February, President G. G. Cobean said in part: "We must admit there has been an unusual amount of destructively competitive price-cutting in our industry. This has seriously affected the results of operations during 1938, both for manufacturers and merchants. In our industry, these conditions became aggravated to an unreasonable degree when demand is slack and volume low. However, during the past year volume was as high as during some recent years when merchants had much better profits."

Swedish Pulp Has Poor Year

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 19, 1939—A noticeable recession occurred in Swedish industrial output during 1938. Pulp and paper prices were reduced on several occasions but no fixed policy could be followed, mainly on account of wide fluctuations in prices of raw materials. The year as a whole proved disillusioning both from the standpoint of production and profits.

A trade factor which gained added significance during the year was the efforts on the part of the Mechanical Pulp Suppliers, the Sulphite Pulp Suppliers, the Sulphate Pulp Suppliers, the Scansulphite, Scangreaseproof and Scancraft, to formulate and apply binding programs for the curtailment of production. In most cases agreement was reached after prolonged negotiations, except in the case of the Sulphate Pulp and the Scansulphite cartels. Labor peace was assured in the industry after employers and representatives of the labor unions agreed on November 25, 1938, to extend the existing agreement virtually without charge until January 31, 1940.

Paper Bought Under Walsh-Healey Act

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 17, 1939—During the week ending April 1, the Government purchased $63,410.20 worth of paper and allied products under the Walsh-Healey Act as follows: Boston Paper Board Company, Boston, Mass., $21,411.00 (estimated); Barton, Duer & Koch Paper Company, Washington, D. C., $27,600.00; and Barton, Duer & Koch Paper Company, Washington, D. C., $14,399.20.

Production Ratio Report

These statistics are based upon paper production reports to the American Paper and Pulp Association.

COMPARATIVE MONTHLY SUMMARIES[1]

Months	1939	1938	1937	1936	1935	1934
January	77.5%	63.9%	90.3%	76.1%	65.8%	.....
February	81.8%	68.7%	90.1%	77.9%	70.0%	.....
March	84.0%	69.6%	90.3%	76.0%	70.5%	.....
April	.....	68.3%	92.1%	82.3%	70.0%	.....
May	.....	69.0%	90.6%	81.6%	69.4%	.....
June	.....	66.0%	87.3%	80.7%	72.3%	.....
July	.....	72.0%	81.8%	77.3%	64.9%	.....
August	.....	77.2%	82.9%	81.5%	70.9%	.....
September	.....	76.3%	78.6%	80.5%	71.9%	58.2%
October	.....	82.5%	73.5%	87.6%	75.6%	64.7%
November	.....	79.6%	61.9%	88.0%	75.3%	61.7%
December	.....	74.4%	54.5%	85.9%	71.2%	59.6%
Year Average	.....	72.3%	80.6%	81.3%	70.5%	.....
First 14 weeks	81.3%	67.5%	90.4%	77.3%	68.7%	.....

COMPARATIVE WEEKLY SUMMARIES[1]

CURRENT WEEKS, 1939		CORRESPONDING WEEKS, 1938	
March 4	83.7%	March 5	67.8%
March 11	84.5%	March 12	70.1%
March 18	82.1%	March 19	69.3%
March 25	84.1%	March 26	68.5%
April 1	85.6%	April 2	72.3%
April 8	83.0%	April 9	67.3%

The following statistics show the number of mills reporting by ratio groups:

	Number of Mills Reporting—Current Weeks					
Ratio Limits	March 4, 1939	March 11, 1939	March 18, 1939	March 25, 1939	April 1, 1939	April 8, 1939
0% to 50%	55	60	51	55	50	37
51% to 100%	252	247	249	241	234	162
Total Mills Reporting	307	307	300	296	284	199

PAPERBOARD OPERATING RATIOS

Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1935	62%	68%	68%	63%	61%	66%	62%
1936	62%	67%	67%	70%	69%	70%	69%
1937	80%	86%	86%	88%	85%	77%	66%
1938	54%	60%	61%	57%	58%	56%	57%
1939	60%	67%	....	....	....	....	....

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1935	67%	71%	77%	71%	61%	66%
1936	75%	78%	82%	80%	74%	72%
1937	74%	69%	65%	55%	45%	73%
1938	66%	66%	70%	65%	59%	61%

Week end. Mar. 4, 1939—68%
Week end. Mar. 11, 1939—70%
Week end. Mar. 18, 1939—70%
Week end. Mar. 25, 1939—73%
Week end. Apr. 1, 1939—74%
Week end. Apr. 8, 1939—71%

[1] Production-capacity ratios are based upon six-day capacity ratings which are adjusted periodically to correspond with the ratings reported by individual companies. Ratios are subject to revision until all reports are received.

To Build Newsprint Mill at Iuka

A press dispatch from Tupelo, Miss., under date of April 15 says that news print pulp mill would be in operation at Iuka, forty miles northeast of this city, within fifteen months.

Mr. Goodman, an official of the Iuka Water and Light Department, said the Reconstruction Finance Corporation would provide $2,500,000 of the necessary capital and a private concern would furnish the rest.

"Work will probably start within ninety days on the plant," he added, "which will require nine months for construction." About $500,000 would be used to purchase timber to be used for paper-making and $4,500,000 would be put into construction.

About 20,000 acres of timber are already under option to the firm, with 30,000 more available, he added. G. C. Jones, Iuka business man, donated the site for the building, a 400-acre lot within 200 yards of a 100,000-volt Tennessee Valley Authority substation.

"Now there's an OPAQUE sheet"

Salesmen are encountering many comments such as this when offering the new improved lines—more opaque, whiter and brighter papers that arouse enthusiasm among paper dealers, printers and consumers.

Because the desired degree of these qualities can be obtained by CRYPTONE and ALBALITH Zinc Sulphide Pigments, which are available in a range of strengths to meet a variety of requirements, the use of these pigments is increasing.

The trade is looking for these qualities. . . . Our Technical Service Department is ready to cooperate with you on any phase of this development.

New Jersey Zinc

THE NEW JERSEY ZINC COMPANY 160 FRONT STREET, NEW YORK

ZINC SULPHIDE PIGMENTS IN PAPER

Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Delaware Valley Discusses Bleaching

The Delaware Valley Section of TAPPI met at the Engineers Club in Philadelphia on April 14. Mr. Connor, chairman, introduced Mr. Fish, chairman of the Pennsylvania-Delaware Superintendents Association, who spoke on the subject of the joint meeting to be held on Friday, May 25 between the superintendents and the Technical Association. This meeting is to be held at the Bellevue-Stratford Hotel and he urged all to attend. Following the supper, Mr. Connor introduced Mr. Savell of the Mathieson Alkali Works, who spoke on the subject "New Developments in Bleaching Pulps". Mr. Savell in opening his speech mentioned that the kraft mills have expanded rapidly and beyond expectation in the South, and thus the problems of bleaching have been much greater than in past years. The G. E. brightness tester has made it possible to obtain comparisons on results, which has greatly helped in the bleaching problems. Mr. Savell showed slides of Southern pine reforestation and forest lands, together with the Union Bag kraft mill development.

Bleaching Kraft

Beginning with the fundamentals of bleaching kraft, the fibers are more difficult to bleach than sulphite. The removal of the incrustance on the fiber is necessary in order to remove the coloring matter within, so that the finished product may be brought up to the desirable brightness. In so doing, the pulp is exposed to serious degradation.

Paper was produced first without any form of bleaching. Then came the bleaching powder which had a wide spread use. In the beginning there were no specifications of this material and the pH of the bleaching solution might be anything in comparison with the available chlorine. This is now all under very definite control. It has only been for the last twelve years that combination of chlorine and hypochlorite have been used. Since then every conceivable combination of chlorine and hypo-chlorite, caustic and lime have been tried. Today the practical application in the majority of treatments has indicated, first, introduction of chlorine (3½ per cent density); second, exhaustion; third, washing in an acid condition; fourth, caustic soda solution to extract the soluble chlorinated products; fifth, washing and sixth, treating with one or two stages of hypochlorite.

With sulphite pulp it is seldom necessary to use the second stage of hypo. The color is generally sufficient and it is not difficult to obtain 75 to 78 brightness on the G. E. tester.

The speaker next explained the Thorne and Kamyr systems for bleaching. In the first, pulp is subjected to chlorine treatment, exhaustion and acid wash in a vacuum type washer. The washed pulp is then mixed with the solution of hypo-chlorite and goes through a tower at from 8 to 15 degrees consistency. After each it is slushed away at the bottom and pumped to a washer for final treatment.

The Kamyr seven stage process involves the use of seven vertical towers. The first tower is for direct chlorine treatment; second tower is for caustic treatment; third—chlorine; in the fourth tower is a fusion washer with water only; so that the fiber may be completely washed; succeeding towers are for hypo-chlorite treatment. Each of the towers has its own washer. Mr. Savell pointed out that this is an excellent bleaching process. In comparing the batch and continuing systems, the speaker had a good word for both, pointing out that the former is excellent for flexibility in bleaching, whereas the latter cannot be beaten for cost and simplicity of operation.

Following the presentation on the outline of bleaching, Mr. Savell spoke of development work on bleaching, with what he referred to as C-2, or chemically, Na Cl O_2. He explained that starting with Na Cl O, as an additional atom of oxygen was added through to Na Cl O_4, that "oxidation potential" was greatly reduced. In other words, the hypo-chlorite is a very severe bleaching agent and as the oxygen is increased in this material up to the chlorate, bleaching action is less severe, and in experimenting with the C_2 it has been found that very high color and good quality pulp could be obtained without any strength degradation whatsoever.

Those Who Attended

Those who attended were; J. J. Jenstrom, S. G. Briscoe, Jim Fish, Walter L. Savell, G. P. Vincent, James Brennan, Harry Hulmes, L. M. Sutherland, L. Justino, R. W. K. Ulm, R. B. Martin, C. G. Albert, Chas. A. Shubert, R. H. Underdown, H C. Maxwell, C. W. Tucker, A. I. Pettroff, E. J. Stokes, Wm. Carshall, Geo. Heidrich, James H. Fritz, Howard H. Striet, Robt. F. Nelson, Henry Childers, A. E. Griffin, C. E. Kinney, A. W. Wickham, A. Schnabel, F. L. McAndrews, S. M. Cooper, James L. Gravel, Ward Harrison, L. L. Schroth, P. M. Loddengaard, V. Jacobsen, Ed Heckman, A. L. Bixler, W. F. Mitchell, R. H. Dillinger, R. T. Bingham, A. S. Hall, Charles W. Rivise, A. McInnes, Jr., R. J. Stuart, B. M. Thomas, H. H. Hanson, C. M. Connor, W. M. Shoemaker, G. L. Schwartz and James d'A. Clark.

Kalamazoo TAPPI Meets

The Kalamazoo Valley Section of the Technical Association of the Pulp and Paper Industry met Thursday, April 6, at the Park American Hotel, Kalamazoo, Mich.

After dinner a short business session was held. Chairman Paul deGuehery appointed a nominating committee for the June election consisting of M. R. Wilkins, Bryant Paper Company; E. B. Taylor, American Cyanamid and Chemical Corporation; J. L. Waber, Rex Paper Company.

The first speaker was P. M. Loddengaard, of Bulkley, Dunton & Co. He described the Sveen Process and the Flotation Save-all. A number of actual mill results were shown where increased retention and increased sizing were obtained by the use of Sveen Glue at the head box. With the Pedersen Flotation Save-all, Sveen Glue is added to the material which is then pumped against a spring loaded valve. About 1 per cent by volume of air is added. This causes the suspended material to come to the top where it is taken off. The resulting effluent is so clear, said Mr. Loddengaard, that it may be used anywhere on the machine.

The second speaker was A. L. Chaplin, of Leeds & Northrup. He spoke on "pH Control and Instrumentation." The development of suitable instruments for continuous pH control in the paper mill was described. He said antimony and glass electrodes are best adapted for this work.

After the scheduled program, a film was shown by the Socony-Vacuum Oil Company.

Those in attendance were: Arthur Weinland, H. O. Ware, Arthur D. Dreis, R. T. Washburn, P. F. Neumann, M. J. Loveland, Fred S. Chappell, Ralph Ralston, H. C. Bradford, E. F. Whittington, Harold Heath, J. L. Waber, A. W. Cole, V. C. Mathis, R. A. Olson, M. R. Wilkens, O. F. Fischer, M. F. Flotow, F. L. Zellers, B. K. Asdell, H. S. Faram, Arthur Stolle, L. J. Scheid, Al Perlick, L. H. LaLiberte, Frank Libby, W. F. Hathaway, W. J. White, Geo. H. Rice, John Bauman, C. E. Hellenberg, Karl Molenbacker, Baldy Smith, B. Benson, John Tooker, C. C. Schneider, F. R. Hamilton, C. Abbott, H. B. Johnston, A. E. Hays, M. S. Fogerty, G. C. Schmid, Paul deGuehery, Ray L. Barton, Wm. H. Astle, Fred Hodgemire, Buster Griffiths, Chas. L. Horton.

New England TAPPI to Meet

New England TAPPI and the Connecticut Valley Superintendents will meet at the Roger Smith Hotel, Holyoke, Mass., Saturday, April 22, 1939. The afternoon business session at 3:00 P. M. to be followed by a dinner-dance 7:30 P. M.

Dr. R. M. Leighton and P. B. Holden of the technical staff of Stowe-Woodward, Inc., will present a paper on "New and Old Application of Rubber Rolls in the Paper Industry."

John H. Long of the Papermakers Chemical Division of the Hercules Powder Company, Wilmington, Del., will talk on thermoplastic coatings—"New Approach to Decorative Paper."

E. B. Coleman of the Coleman Electric Company, Maywood, Ill., will discuss the new Coleman pH recorder.

Members should remember to bring the ladies. Bridge may be played in the afternoon during the meeting and there will be a dinner-dance at 7:30 P. M.

Uses of Polyvinyl Alcohol

A new technical bulletin covering the properties and uses of "PVA" polyvinyl alcohol has been issued by The R. & H. Chemicals Department, E. I. du Pont de Nemours & Co. Applications of the product for grease-proof coatings, textile sizing, adhesives, molded articles and protective coatings are described. Chemical data dealing with viscosity, blending characteristics, solubility, and film strength are included.

Polyvinyl alcohol has come into use in many industries, among them the paper, rubber, adhesives, drug and cosmetics, leather, soap, printing ink, food and automotive fields. It is water soluble and can be blended with a variety of materials that are soluble or dispersible in water, such as rubber latex, casein, starches, protein, gum tragacanth, gum arabic and soya bean protein.

Wood Handling Machines

A bulletin just issued by the American Hoist & Derrick Company, St. Paul, Minn., describes the company's machines for handling pulpwood. The American line includes locomotive cranes of the track type, using gasoline or Diesel engines, steam and electric power; crawler cranes, run by gasoline and Diesel engines, and hoist and derrick outfits designed for gasoline engines, steam, and electric power. It is stated that steam locomotive cranes are favored by pulp mills, although the use of gasoline and Diesel engines are growing in popularity. The American locomotive crane may also be used as a switching engine. The crawler cranes, built in a range of sizes, are available for use in the woods. American derrick hoists range from single line pull of 25,000 pounds on standard 20-inch drums, to 50,000 pounds with high purchase gearing.

Technical Data Alloy Tubes

The Babcock & Wilcox Tube Company, Beaver Falls, Pa., has issued its Technical Bulletin No. 12, Condensed Technical Data on High-Temperature Steels, containing very useful information and technical data on B&W Seamless Alloy Tubes and Pipe for High Pressure and High Temperature Services. Curves and a complete tabulation give: Analysis, Applications, Minimum Physical Properties, Creep Strength, Short Time Tensile Strength, Oxidation Resistance, Corrosion Resistance, Temper Embrittlement, Working Qualities, and Approximate Relative Cost for 15 different materials.

The bulletin may be had by making request on company letterhead or by otherwise giving company connection.

Delaware TAPPI to Meet

The members of the Delaware Valley section of the Technical Association of the Pulp and Paper Industry and the members of the New Jersey-Pennsylvania Division of the American Pulp and Paper Mill Superintendents Association will hold an informal joint dinner meeting at the Benjamin Franklin Hotel in Philadelphia. The date is April 29, the time 6:30 P. M. and the speaker for the occasion will be Frederic C. Clark, president of TAPPI.

A New Fiber Classifier and Its Applications*

By Forrest W. Brainerd[1]

Abstract

A new fiber classifier is described, in which relative movement of stock and screen is accomplished by rotating standard 12 inch sieves mounted on horizontal axes. The design has the advantage of simplicity, large screen area and moderate cost. Very satisfactory separation is accomplished in five minutes, and auxiliary filtering and draining equipment make possible eight runs per hour. Results are shown to be reproducible within one per cent.

Data are given to show the effect of altering variables connected with its operation and to show the application of the instrument to pulp testing and process control.

Classification is stated to be valuable because it provides information about a fundamental property of pulp which is not rapidly obtainable by other methods.

This paper describes a new fiber fractionator, or classifier, which is believed to combine in one instrument all the virtues of the several classifiers which have been developed during the past ten years.

Application to Groundwood

The necessity for a test capable of measuring fiber length distribution as a supplement to the freeness test has been recognized by groundwood manufacturers for many years. As long ago as 1924 C. S. V. Hawkings *(1)* published the results he obtained by separating groundwood into fractions on standard Tyler screens, and in recent years the number of investigations has multiplied many times over.

The necessity for such a test arises from the fact that the fiber distribution of a pulp having a given freeness may resemble any one of three fundamentally different types, as shown in Fig. 1.

It is theoretically possible to combine various sulphite or groundwood fractions, according to each of these patterns to give pulps of identical freeness, but papers made from these three stocks would have very different physical properties.

Of course, none of these distributions is duplicated exactly in practice, but since any of the three general types may be roughly approximated in groundwood by suitably controlling the steps of the process, the long-continued interest of groundwood manufacturers in classifiers is understandable. It is true that strength tests, particularly tear tests, on hand sheets would serve to differentiate these different types of pulp, but the making and testing of hand sheets is not satisfactory as a rapid routine control test. Aside from this objection, if information is desired about any variable, such as fiber length distribution, it is best to measure this variable in as direct a manner as possible. A good classifier provides a direct method for measuring fiber length distribution, and gives results reproducible within one per cent. in a very few minutes.

Excluding optical properties, length is one of the few fundamental physical properties of fiber. Among others are width, thickness, strength of individual fibers and something which can be called bonding strength. The usual tests such as specific volume, burst, tear, tensile, etc. measure combinations of these properties, and for this reason each must be interpreted with proper regard to the others. In contrast, the classification test by itself provides reasonably exact information concerning an isolated and important characteristic of fiber.

Application to Chemical Pulps

Classification is equally applicable to chemical pulp, but for a different reason, since the fiber length of unbeaten pulp depends more on the species of wood used than on any other single factor. The usefulness of the classifier in this field lies in the fact that it constitutes a new tool for measuring the effect of beating or jordaning. This application is potentially of much greater value than the more obvious one of controlling groundwood quality. Except for tedious microscopic examination requiring skilled technique, there has been in the past no indisputable method of distinguishing between cutting and the several other effects of refining action which are commonly grouped under the name "hydration." The classifier provides such a method.

The instrument has proven unexpectedly useful as an adjunct to regular pulp testing equipment, particularly for studying experimental or unfamiliar pulps. A fractionation test shows clearly how well or how badly a pulp withstands beating. Further reference will be made to this later.

Previous Developments

The foregoing facts appear to constitute sufficient reason for the existence of some kind of classifier. The problem has been approached in several different ways, and it will be helpful to review briefly the developments which have preceded the instrument under discussion.

Classification has been used for a long time in the study and evaluation of granular mineral materials, and for this application there have been developed two standard series of screens, the Tyler and the U. S. Bureau of Standards sets. It is possible to ob-

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry Roosevelt Hotel, New York, N. Y., Feb. 20-23, 1939.

[1] Member TAPPI, Research and Development Supervisor, Scott Paper Co.

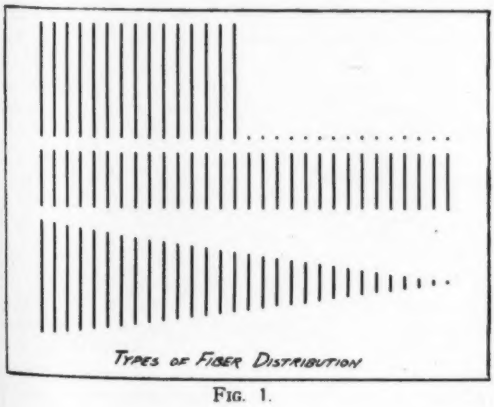

FIG. 1.

tain a rough separation of pulp into fractions with this type of screen by washing the sample with a stream of water, but the difficulty of attaining sufficient agitation of the fibers and their tendency to slip through the meshes endwise obviously make such a method unsuitable.

The first instrument properly called a fiber classifier of which there is any record in the literature is the Hurum flour tester described by Per Klem *(2)*. This is a very simple device consisting of a glass cylinder containing a hand agitator patterned after the old-fashioned jeweler's drill with a spiral-cut shaft and bobbin. The cylinder is closed near the bottom with a 65 twill mesh screen after the manner of a freeness tester. The cylinder, containing a one-gram sample of pulp is filled with water and emptied several times, with constant agitation, and the coarse fiber is finally filtered out and weighed. The instrument has the very great virtue of simplicity, but it is doubtful if it is capable of any high degree of precision.

Modified Flat Screens

Beginning in 1930, three groups of investigators, namely, Schafer and others at Madison *(3)*, Campbell at Abitibi *(4)* and Summerville in England *(5)* reported studies made by fractionating groundwood on flat screens with wire mesh substituted for slotted plates. In some cases series of screens were used, and in others a single screen with interchangeable plates. Separation into fractions with different properties was achieved in all cases, but the lack of relative movement between the pulp and screen, and the absence of positive alignment of the fiber axes parallel to the slots always permits of endwide passage of many fibers through the screens in this type of equipment, and the separation achieved is somewhat affected by width as well as by length. This may be desirable in special cases, but in general separation exclusively by length is more useful. To accomplish separation by length alone, the fibers must have a low enough concentration so that they are in suspension and are free to move and turn in any direction, independently of other fibers.

Theory of Fractionation

A fiber suspended in a stream of water approaching a screen is free to assume any position, but actually is more likely to approach in an endwise position unless special care has been taken to eliminate eddies, cross-currents and obstructions which tend to align fibers in the direction of the flow. A fiber in such a position will pass through any hole having dimensions greater than the fiber cross-section, regardless of its length. A fiber may likewise pass through an orifice without obstruction, regardless of its position, if its length is less than the diameter of the orifice. If its length is greater than once but less than twice the diameter, and its long axis approaches at right angles to the flow so that it strikes the edge, the flow of water through the hole will set up a couple on the unbalanced system and the fiber will rotate and pass through. If it happens to bridge the hole on its first approach it will be prevented from passing, but if it is removed and caused again to approach, sooner or later it will assume a position which will permit it to go through if the run is continued. A fiber approaching the hole perpendicular to the stream flow and having a length greater than twice the mesh width will never pass through, since it will always wholly or partially bridge the gap, with the force of the water passing through adjacent holes preventing its rotation. Accordingly, a perfect classifier should be able to separate pulp into fractions, the shortest fibers of which are exactly equal in length to twice the width of the orifices.

This subject has been discussed at some length because previous investigators appeared to be puzzled by the fact that their fractions always had a fiber length which exceeded the greatest dimension of the screen opening.

Actually several factors combine to prevent the practical attainment of perfection. The first is that since square orifices, as in a wire screen, are the only convenient ones to use, there is always a borderline zone between twice the mesh width and twice the mesh diagonal in which fibers will be found in both fractions.

The second is that fibers bridged across the coarser screen meshes sometimes are not stiff enough to resist the force of the accompanying flow of water, so that separations of the long fractions are less sharp than they would be if the fibers were more rigid.

Thirdly, long fibers which are bent or curled may go through an orifice having a diameter of less than half the length and finally some short fibers which normally would pass through the screen are tangled with or joined to the fibrillae of long fibers and do not become separated.

Other Types of Classifiers

At some time prior to 1932, Harold T. Ruff of the Mead Corporation constructed the instrument which was described by the writer in 1934 *(6)*. It was an improvement over previous designs in that an agitator rotating at 800 r.p.m. directly in front of the screen induced a high velocity parallel to the screen in the approaching stream of dilute stock. This high velocity aligned the fiber axes parallel to the screen, and reduced the component of flow in the plane normal to the screen to a negligible amount. It had several faults, chief of which were undersize screens, lack of speed and too many moving parts, but on the whole was quite satisfactory. The original model is now at the Institute of Paper Chemistry, and the improved model is the Bauer-McNett classifier.

In 1932 Johnston *(7)* and his coworkers at Montreal published the first of several papers describing a classifier which has become well known. Its progenitor was the Abitibi classifier described by Campbell in 1930. This apparatus has passed through many evolutionary forms, and in it the use of an agitator for aligning fibers parallel to a screen has been carried to a high degree of perfection. The clearance between baffle and screen is small and carefully controlled so that in effect a stream of stock is projected across the screen at a very slight angle. By keeping compartment volume to a minimum fractionation is completed rapidly and effectively. The chief objection to the instrument is its high cost and complication. A less serious objection is that its method of operation is anything but speedy or simple.

In 1934 James d'A. Clark designed and constructed a classifier based on a new principle, in which relative motion of fibers and screen was accomplished by rotating the screens rather than by agitating the stock. The screens were placed in series in a brass cylinder which revolved on trunnions. By eliminating the necessity for baffles and agitators an enormous simplification over previous instruments was at once accom-

plished. At the same time, rotating the screen eliminated the necessity for confining screening area to the zone closest to the agitator and so permitted screen area to be multiplied several times. Catch pans for each compartment and special devices for filtering out the fibers made rapid operation possible. Unfortunately, it developed that simplification had been carried too far, for water circulated continuously in both directions through the cylinder, carrying the fine material back to the coarse compartments, so that fiber separation, while satisfactory for ordinary purposes, and quite reproducible, was neither complete nor particularly sharp.

Nevertheless as the principle appeared to be sound, last year Mr. Clark and the writer combined ideas for a new instrument which is believed to be the most satisfactory so far described. It retains the large screen area of the preceding model and its other desirable features, but recirculation is prevented by isolating each screen. The screens themselves are now standard 12 inch sieves, which may be purchased from any manufacturer of this type of equipment. The length of run is only 5 minutes (shorter than any other) so that eight samples can be classified into three fractions and results computed in an hour without difficulty. The results are reproducible within one per cent., and the cost of the instrument is moderate. The complete assembly is shown in Fig. 2, the cross-section in Fig. 3. Its simplicity is apparent.

Description of Clark Classifier

The instrument is made up of a constant head-box (A) for water supply, a sample container (B), compartments (C and D) arranged in cascade to which are attached (E and F), arranged to rotate on hollow cantilevered journals through which the stock and water flow, two pans (G and H) into which the compartments are drained and two filtering cylinders (J and K) in which filter papers are held by bayonet locks. The screens are standard 12 inch sieves into each of which a short nipple is inserted to permit of draining. The screens are rotated by round belts or preferably by roller chains, from a countershaft driven by a ¼ h.p. motor. Showers (L and M) for backwashing the screens are permanently connected, an advantage possessed by no other instrument.

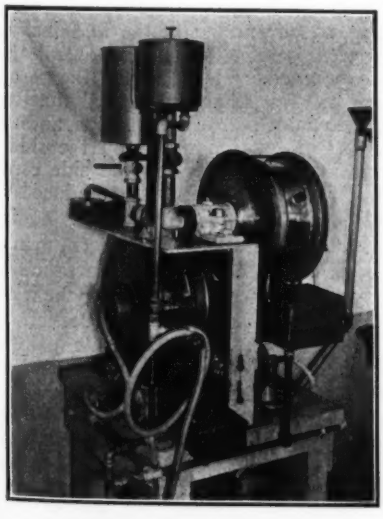

FIG. 2.
Clark Classifier—Front View

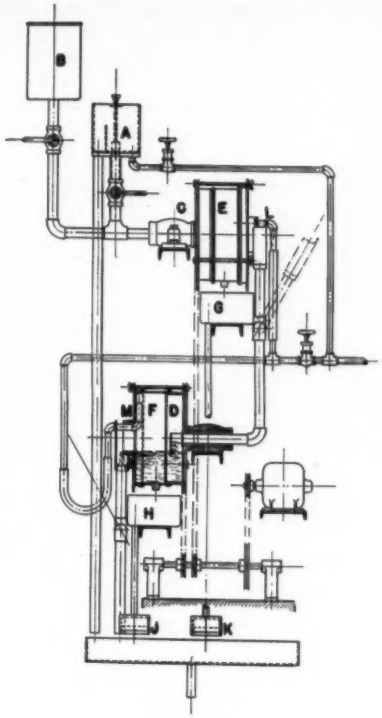

FIG. 3.
Clark Classifier Sectional Diagram

The capacity of the compartment ahead of the wire is 3830 cc, so with 5 grams of stock the consistency at the beginning of a run is 0.13 per cent. At the end it may be anything between this and zero.

METHOD OF OPERATING.

The method of operation is to dilute to four liters in the sample container (B), an accurately weighed five-gram sample of properly disintegrated pulp. The water supply is turned on, the motor started and the apparatus filled with water. When water issues from the second screen, the water supply valve (L) is closed, the sample container valve (M) opened immediately and the sample allowed to flow to the screens. The container is washed out with one liter of water, and at the end of twenty seconds the water supply valve is again opened. The run is continued for four minutes and forty seconds longer, the motor stopped, and the screens drained into the pans, to which, in the meantime, filter cylinders containing paper have been attached. As soon as the screens are empty the motor is again started, the showers turned on and washing continued until the compartments are filled, after which they are once more drained into the pans. As soon as the screens are empty after this, and even before the contents the pans have been filtered off, another run may be started. The entire operation requires about seven minutes, so that eight runs can be and have been easily completed within one hour.

The samples are usually dried on a hot plate, and being small dry rapidly. A complete result is obtained within fifteen minutes from the time a run is started.

The mesh of the screens used, depends to a large extent on the stock, but they are so readily interchangeable that no great delay is involved, even should the test be made according to the Canadian procedure which involves changing a screen after each run.

Standardization of Variables

For any given set of screens, the independent variables are rate of rotation, rate of flow, weight of sample and length of run. The rate of rotation should be that at which sharpest separation is obtained, the rate of flow as high as possible, and the length of run as short as possible if the instrument is to be of the greatest use for control work. In the course of a lengthy study with different weights of samples, speeds from 36 to 94 r.p.m. rates of flow from 10 to 20 liters per minute and lengths of run from 2½ to 15 minutes were tried. The conditions finally adopted were a speed of 48 r.p.m., at a rate of flow of 15 liters per minute and a length of run of 5 minutes, using a 5-gram sample. It is of interest to review the effect of changing each of these variables, as indicating the way in which the instrument functions.

The numerical data are not so extensive as might be expected for early during the investigation it was discovered that an inspection of a portion of each fraction, mounted in glycerine on a lantern slide plate and projected on a screen, was much more useful in evaluating the effect of changes on performance of the instrument than the weights of the fractions. Counting and measuring the fibers on each of the slides would of course have been a hopelessly tedious and time-consuming task, aside from the fact that usually qualitative data were at that time sufficient.

It was found that the effect of higher speed was to reduce the quantity retained on the first screen, (Experiment A) and inspection showed definition to be poorer at high speeds. This was unexpected, for a higher relative speed between screen and flow might be expected to improve the efficiency of the instrument. However, further investigation showed that the higher rate of rotation induced greater circulation in the compartments on either side of the screen, as shown in Fig. 4.

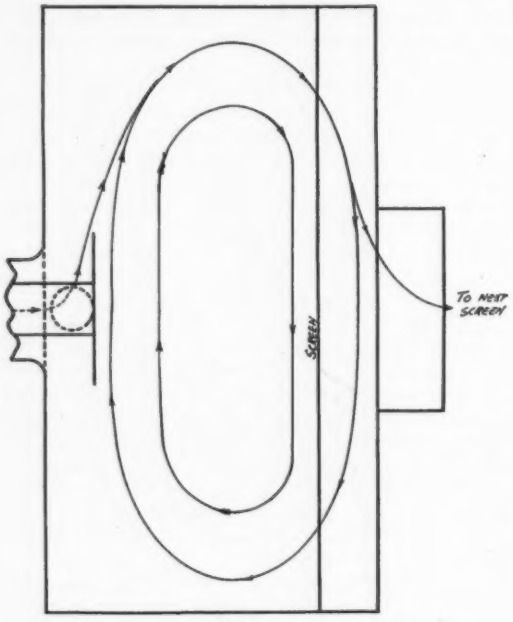

Fig. 4.
Recirculation Diagram

It will be seen that as the rate of recirculation increases, the component normal to the wire increases, tending to decrease sharpness of separation by encouraging endwise passage. The speed was reduced and it was found that a rate of rotation as low as 36 r.p.m. was satisfactory at flows of 10 liters per minute, but at 15 liters per minute matting occurred at 40 r.p.m. Accordingly the higher speed of 48 r.p.m. was adopted so as to avoid the conditions where incipient matting was likely to occur.

A brief study was carried out to determine the optimum rate of flow. (Experiment B). The highest practicable rate was obviously desirable in order to reduce the time required. A considerable amount of the first work was done at 10 liters per minute, but rates of 12.5, 15 and 20 liters per minute were soon tried. In the present form of the instrument, 20 liters per minute is too high for some pulps, but a rate of 15 liters per minute has been entirely satisfactory for even the slowest stock.

Some work was done on sample weight to determine its effect. (Experiment C). Curiously enough, the data proves that for any given retention the length of run necessary is almost exactly proportional to the weight of the sample. Under the circumstances, the reason for adopting 5 grams is obvious.

The remaining variable was the length of the run. (Experiment D). This was more difficult to standardize than any of the others. Curves were run on various pulps for increasing lengths of time weighing the samples to determine the slope of the curves and inspecting slides to compare the ratio of too-short fibers retained to too-long fibers passed through. Without exception it was found that at five minutes the slope of the first screen curve had become nearly constant, and since definition was satisfactory at this point, a run of five minutes was adopted.

By the time the work which has been described had been completed the instrument was considered satisfactory, although the sharpness of the fractions left something to be desired. Routine testing was begun on paper machine stock, and it was soon discovered that stapling was occurring in the half inch nearest the rim of each screen to such an extent that this section was practically closed, while the rest of the wire was clean. Investigation showed that water is carried up the rim of the rotating screen, and that this effect is much more pronounced on the side where the water is introduced, i.e., on the side containing the pulp. This difference in level induced a flow through the screen, and since there was no force to align the fiber axes parallel to the screen, many fibers were passing through endwise. Those which did not pass entirely through were stapled over the wires. To correct this defect, the outer ½ inch section of each screen was closed off with Tornesite paint. This change improved definition markedly, and at the same time decreased the slope of the retention curve, indicating sharper cut-off. Also it altered somewhat the percentages retained. (Experiment E).

After ability to measure the desired property, the next requisite of any instrument is reproducibility of test results. Experiment E gave some indication of the reproducibility of which this instrument is

capable; Experiment F provides further confirmation.

A final step remained of comparing this instrument with some other. Samples of sulphite and groundwood were run according to the Canadian procedure, to which this classifier is very adaptable, and duplicate samples were sent to Montreal. (Experiment G).

It will be noted that there is an excellent concurrence in results considering the difference in principle of the two instruments. The perfect agreement in these figures is probably entirely fortuitous, for a somewhat different set of conditions might just as readily have been adopted, but it was nevertheless most gratifying, especially in view of the fact that the procedure is so much quicker and simpler than on the Canadian machine, and it is believed by inspection of projected slides of the fractions that the sharpness of the division of the fibers in each classification is at least as good.

Practical applications are illustrated and described in Experiments J, K, L, M, N, O and P, and a theoretical study in Experiment H.

Conclusion

It is believed that sufficient evidence has been presented to show that the classifier is a most valuable addition to pulp testing equipment. Only a part of its field has been covered; it has also been found useful for evaluating the performance of different types of jordans, of different piping systems for jordans, and for routine pulp preparation control.

It is entirely possible that a reasonably close control could be maintained in a pulp mill or bleach plant with no other instrument than a fractionator and a laboratory refiner, or beater, especially a rapid one such as the kollergang. The results would not supplant the strength tests universally used, but the fact that a very good indication of pulp properties could be obtained in so short a time would make such a test procedure of great value.

Acknowledgement

The writer wishes to acknowledge the part played in this work by James d'A. Clark, who originated the principle of the rotating screen fractionator, and with whom this study was carried out. Thanks are also due to S. P. Moore, who carried out a number of the experiments and many others not here recorded during the course of this work.

APPENDIX

Experiment A

EFFECT OF RATE OF ROTATION

The rate of rotation of the screens can be varied through a wide range by suitable combinations of pulleys. A few early results with unpainted rim, at a rate of flow of 10 liters per minute are given. See also Fig. 5.

	63 r.p.m.			74 r.p.m.			94 r.p.m.		
Length of Run	On 28	On 100	Through 100	On 28	On 100	Through 100	On 28	On 100	Through 100
5 min.	51.3	19.4	30.2	46.8	25.3	28.8	41.4	27.6	31.9
10 min.	41.1	26.7	33.1	36.3	33.0	31.6	30.4	35.4	35.1
15 min.	34.7	31.8	34.4	27.5	32.3	41.1	21.5	41.3	38.1

The effect of increasing the speed is to decrease first screen retention, and at the same time to decrease sharpness of separation. Visual inspection proves beyond doubt that the best definition is obtained at the lower speed, and later work showed an optimum result at a speed just sufficiently high to prevent matting. Finally a speed of 48 r.p.m. was chosen as being sufficiently fast to prevent matting of the longest fibered stock tested, yet slow enough to give excellent definition.

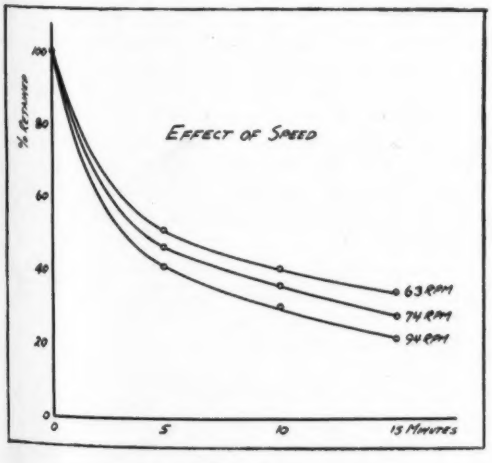

FIG. 5.

Experiment B

EFFECT OF RATE OF FLOW

The highest rate of flow which can be handled is desirable in order that the test may be completed in the shortest possible time. The following data shows the effect of varying the rate. Speed 48 r.p.m., rim painted:

	5 liters/minute			10 liters/minute			15 liters/minute		
Length of Run	On 20	On 48	Through 48	On 20	On 48	Through 48	On 20	On 48	Through 48
5 min.	40.6	22.1	37.3	37.4	23.2	39.4	35.0	24.6	40.4
10 min.	27.2	28.8	44.0	24.4	27.9	47.7	22.7	27.5	49.9
15 min.	17.8	31.7	50.5	16.1	30.8	53.1	15.5	29.3	55.2

It will be seen that higher rates of flow accomplish classification more quickly, but not in the same proportion as the increase in rate of flow.

Experiment C

EFFECT OF WEIGHT OF SAMPLE

Several tests were run comparing five and ten gram samples, using a constant volume of water per gram of stock. The 10-10 designation means 10 grams run for 10 minutes, the 5-5, 5 grams for 5 minutes. Speed 48 r.p.m., rim unpainted.

	Sample 1		Sample 2		Sample 3	
	10-10	5-5	10-10	5-5	10-10	5-5
On 28	61.1	61.2	43.8	43.2	42.6	42.0
On 100	16.0	18.8	23.7	25.8	23.9	26.2
Through 100	22.9	20.0	32.5	31.0	33.5	31.8

The first screen retention appears to be independent of the size of sample, but the fines fraction is slightly higher with the heavier weight. The longer washing to which the dilute stock in the second screen is subjected is undoubtedly responsible. The lighter weight sample is believed to give results closer to the truth.

At times it may be desired to classify samples of some other weight than standard, for example, when less than 5 grams are available. Results are given for three runs on the same stock, using 4, 5 and 6 gram samples and 15 liters per gram in each case. Speed 48 r.p.m. rim painted:

Weight	4g	5g	6g
On 14	7.7	7.5	7.0
On 28	35.3	35.1	35.1
Through 28	57.0	56.7	57.9

A considerable range in sample weight appears to be permissible if water volume is maintained at 15 liters per gram.

Experiment D

Effect of Length of Run

The proper length of run is best determined by a combination of fraction weights and visual inspection. The following data covers a complete range of stocks. See also Fig. 6. Speed 48 r.p.m., flow 15 liters per minute, rim painted.

Length of Run (Minutes)		3	5	7½	10
Kraft	On 28	83.2	81.2	76.2	73.0
	On 100	8.8	11.2	14.4	16.4
	Through 100	8.0	7.6	9.4	10.6
Sulphite	On 28	69.6	63.0	58.2	55.4
	On 100	13.2	15.6	17.8	19.8
	Through 100	17.2	21.4	24.0	24.8
Jordan stock	On 28	58.0	52.4	48.2	43.8
	On 100	18.8	21.0	23.0	25.0
	Through 100	23.2	26.6	28.8	31.2
Head-box stock	On 28	30.4	26.4	24.0	21.4
	On 100	14.6	16.2	17.8	18.8
	Through 100	55.0	57.4	58.2	59.8
Groundwood	On 28	13.8	9.2	6.8	5.2
	On 100	35.2	36.0	36.2	35.4
	Through 100	51.0	54.8	57.0	59.4

It will be seen that most of the work is done in less than three minutes, and that after five minutes the slope of the curve is nearly constant. It will also be noted that these pulps always fall in the same order regardless of length of run.

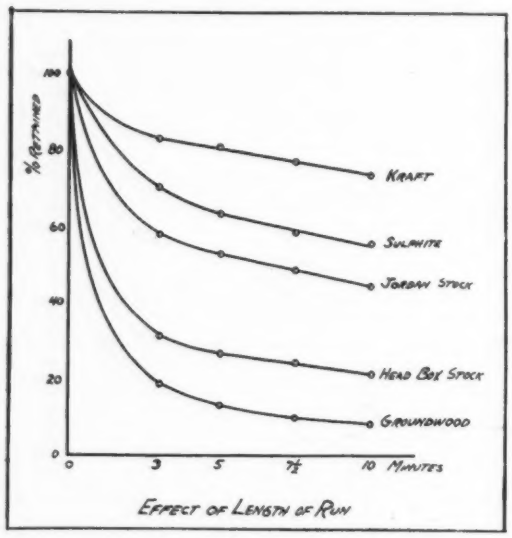

Fig. 6.

Experiment E

Effect of Painting Rim

Painting the outer half inch of the sieve had an appreciable effect on fraction weight in addition to improving definition. Speed 48 r.p.m., flow 15 liters per minute.

	Before Painting		After Painting	
On 28	41.6	42.6	45.8	44.8
On 100	25.8	26.0	23.4	23.8
Through 100	32.6	31.4	30.8	31.4

Painting the screen increased the first screen retention by 3.3 per cent and decreased fines only 1.0 per cent. Quantitative data are not available, but after inspecting slides of the fibers there is good reason to believe that most of the 3.3 per cent were long fibers which should have been included in the first fraction.

Experiment F

Reproducibility

After ability to measure the property desired, the next requisite of any instrument is ability to reproduce its results. A few results are given below. There are others scattered through the data from other experiments. Speed 48 r.p.m., flow 15 liters per minute, rim painted.

	Groundwood		Sulphite			
On 28	8.6	8.2	63.2	63.6	62.6	63.4
On 100	34.4	34.8	18.4	18.2	18.2	17.2
Through 100	57.0	57.0	18.4	18.2	19.2	19.4

A difference of 1 per cent at most can ordinarily be expected on duplicate runs, equivalent to a reproducibility of ± 0.5 per cent. Perfect checks to the last tenth per cent. are not at all unusual.

Experiment G

Comparison with Other Instruments

Two identical samples of stock were tested on the Clark and Canadian instruments, using the same procedure in both cases. Speed 48 r.p.m., flow 15 liters per minute, rim painted.

	Clark Classifier		Canadian Classifier	
	Sulphite	Groundwood	Sulphite	Groundwood
On 28	57.2	7.2	57.6	12.0
On 48	11.1	18.4	16.1	22.0
On 100	12.0	24.2	7.3	21.0
On 200	7.7	19.4	6.8	16.2
Through 200	12.0	30.8	12.2	28.7

The agreement in coarse and fine fractions of sulphite is little short of amazing, and if the 48 and 100 fractions are combined the intermediate fractions agree almost equally well. The Clark instrument indicates a smaller fraction of the long groundwood fibers, but otherwise agrees quite well.

At a later date a sample of the same sulphite stock was classified on the Bauer McNett by Dr. Ruff. The results may impose something of a strain on the readers' credulity, but the exactness of the check is probably a coincidence.

Bauer McNett		Clark	
On 20	47.8	On 20	47.8
On 35	18.3	On 48	23.6
On 65	13.1		
On 150	6.8		

Experiment H

Comparison with Theoretical Performance

The rate of exhaustion of a salt solution was measured and compared with the computed rate.

Assuming perfect mixing, the rate at which a substance will be displaced from a single vessel through which water is flowing at a uniform rate with perfect mixing, is given by the equation

$$C = e^{-\frac{Q}{V}t}$$ where

C = Fraction of original remaining
Q = Rate of flow of water
V = Volume of vessel
t = Time in minutes

For two identical vessels in series, the equation becomes

$$C = \frac{Q}{V}te^{-\frac{Q}{V}t}$$

The results show the percentage of strength of the original salt solution. Speed 48 r.p.m., rim painted.

Time	After First Screen: Actual Per cent	After First Screen: Computed Per cent	After Second Screen: Actual Per cent	After Second Screen: Computed Per cent
0.17 min.	49.0	52.1	17.2	34.0
0.33 min.	25.5	27.5	32.4	35.9
0.50 min.	12.4	14.1	29.6	27.6
0.67 min.	6.2	7.3	21.4	19.1
0.83 min.	2.8	3.8	15.9	12.4
1.00 min.	1.4	2.0	10.3	7.8
1.25 min.	0.0	0.8	5.5	3.7
1.50 min.	0.0	0.3	2.1	1.6
1.75 min.	0.0	0.1	1.4	0.7
2.00 min.	0.0	0.0	0.4	0.3

It will be noted that the computed rate is somewhat less than the actual rate of exhaustion in the first compartment. The computed results are based on the assumption that compartment volume consists only of the portion on the inlet side of the screen. If the entire volume is taken, the rate becomes much too low, so it is probable that no recirculation through the screen is taking place. Exhaustion in the second compartment likewise proceeds at a greater than computed rate, but the curve is displaced about 0.10 minutes by the volume of water retained between the first and second compartments. Figure 7 shows the results.

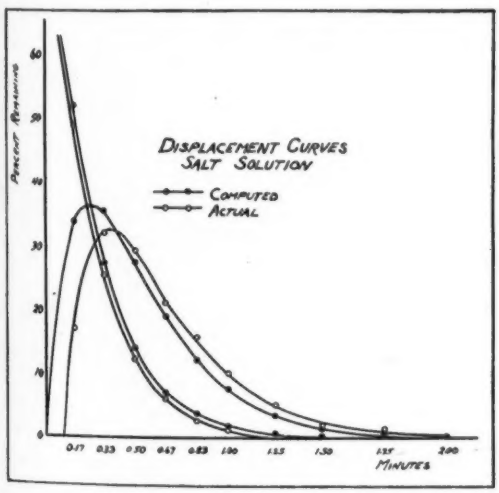

Fig. 7.

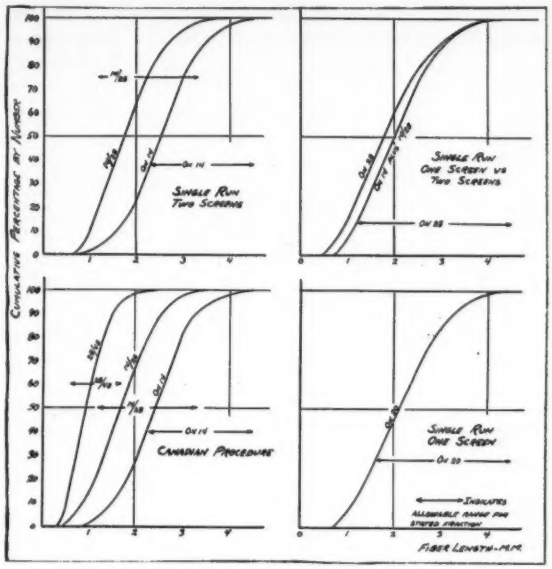

Fig. 8.
Fiber Length Distributions

Since exhaustion in the first compartment is complete in about one minute, it is evident that displacement and fractionation are two very different processes. On the other hand, if a smaller rate of flow had been adopted, the two would have been more nearly alike. (Experiment B.)

Experiment J

Fiber Length Distribution

Fiber length measurements are an essential part of any classifier study. The results from seven fractions of two long-fibered stocks are given below. The standard procedure group consists of measurements on a lightly jordaned stock made up of 50 per cent bleached, 50 per cent unbleached sulphite.

The second group done on the Clark classifier but according to the Canadian Procedure, is made up of measurements of unbleached sulphite beaten to 4 r.p.g. in a laboratory rollergang. Percentages are cumulative by number in all cases. Speed 48 r.p.m., rim painted.

The results confirm the correctness of the procedure which has been adopted, for while the number of fibers shorter than the computed minimum exceeds the number longer than the maximum, the weights of the two are similar.

The performance is considered very satisfactory, for these results compare favorably with those published for any other classifier.

Experiment K

Practical Application

Jordan Study

The power input to a jordan was varied through its

FIBER LENGTH DISTRIBUTIONS

Procedure	Fraction	Fiber Length—mm. 0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	Ave.
Standard	On 14	0	1.7	7.9	23.4	50.0	74.9	90.4	97.1	100	2.57 mm.
Standard	14/28	0	9.7	37.2	64.5	84.8	95.2	99.4	100	...	1.85 mm.
Standard	14 + 14/28	0	6.8	26.6	49.5	72.4	87.6	96.2	98.9	100	2.11 mm.
Standard	On 28	0.3	15.1	38.7	60.4	78.3	89.0	96.7	99.5	100	1.91 mm.
Standard	On 20	0	6.2	23.2	45.0	67.1	83.0	94.3	98.4	100	2.21 mm.
Canadian	On 14	0	1.7	9.1	26.4	52.4	81.4	94.0	97.8	100	2.49 mm.
Canadian	14/28	1.5	11.8	37.0	62.6	89.4	97.6	99.5	100	...	1.80 mm.
Canadian	28/48	7.7	58.5	90.0	98.5	99.5	100	...	...	...	0.95 mm.
Canadian	14 + 14/28	0.7	6.5	22.5	43.8	70.1	89.3	96.7	98.9	100	2.16 mm.

maximum range, and the effect studied by means of hand sheets and fractionation tests.

Horsepower	120	200	225	250	275	300
Specific volume..	1.76	1.69	1.66	1.65	1.64	1.63
Burst factor *....	17.3	21.7	23.1	23.2	24.6	24.3
Breaking length.	2530	3260	3370	3490	3650	3670
Tear factor *....	115	114	112	108	113	107
Drainage factor.	2.2	3.0	3.5	3.5	3.6	4.0
On 14 mesh....	44.8	39.6	36.6	34.8	34.3	31.4
On 28 mesh....	24.2	27.7	29.3	31.1	32.5	33.1
Through 28 mesh	31.0	32.7	34.1	34.1	33.2	35.5

It will be noted that the decrease in tear factor is only 7 per cent while the decrease in the first fraction is 30 per cent. It is characteristic of the fractionator to show changes in fiber length much more markedly than does the tear test, with the exception of an occasional exceptionally long-fibered pulp such as southern pine.

* The slight nonconformity of the results may be attributed to experimental error, but more probably to the fact that some samples in the series were obtained by setting the jordan plug in and some by pulling it out without delaying the sampling till the changed jordan conditions had settled down.

Experiment L

Tests on Chemical Pulp

The following is a series of seven biweekly tests on different samples of a chemical pulp after being beaten to a 4 r.p.g. in a Clark kollergang:

Test No.....	1	2	3	4	5	6	7
Specific volume	1.81	1.79	1.85	1.82	1.80	1.75	1.80
Burst factor..	24.9	24.7	22.0	24.3	22.4	23.7	22.5
Breaking length 3700		3825	3550	3690	3320	3520	3350
Tear factor... 210		145	157	137	127	141	160
On 14 mesh..	65.0	54.6	52.6	54.6	42.8	56.3	60.8
On 28 mesh..	15.0	19.2	22.6	22.6	26.0	19.8	17.8
Through 28 mesh	20.0	26.2	24.8	22.8	31.2	23.9	21.4

The sample which would be rated best on this basis of its physical tests has the greatest long fraction; the pulp which would be rated worst has the least long fraction. The results imply strongly that a satisfactory control could be maintained with nothing more than a kollergang and fractionator.

Experiment M

Groundwood Control

The following table shows the properties of groundwood samples from four different sources submitted to meet the same specification:

Sample No.....	1	2	3	4
Specific volume.....	2.29	2.33	2.36	2.20
Burst factor.....	14.2	14.7	13.0	14.3
Tear factor.....	47	50	46	44
Breaking length.....	2730	2670	2410	2640
Drainage time.....	17.9	16.5	22.4	24.8
Drainage factor.....	22.5	24.3	25.9	28.4
Freeness (Can. standard)	104	105	92	68
Shives—number	76	63	181	104
Shives—area	17.7	14.6	42.9	25.3
On 28 mesh.....	11.2	14.0	20.6	20.0
On 100 mesh.....	38.6	35.0	24.6	26.2
Through 100 mesh.....	50.2	51.0	54.8	53.8

Samples 1 and 2 are much superior to 3 and 4. The classification test by itself suggests that samples 3 and 4 would have high shive areas and low drainage times, and the hand sheets confirm this prediction. Sample 3 has an artificially high freeness because it contains so great a proportion of fines that the mat in the freeness tester is formed with difficulty.

The value of such a test in a groundwood mill is obvious.

Experiment N

Consecutive Shipments on Same Contract

This table shows what can happen when a broker changed the source of supply of a grade of pulp; the last column shows how closely, after a few shipments, a pulp can be matched when adequate testing methods are available at both laboratories of the pulp maker and the mill user.

	Old Source		New Source			
Shipment No....	1	2	1	2	3	8
Specific volume..	1.48	1.46	1.47	1.44	1.49	1.48
Burst factor....	26.4	25.8	31.6	30.3	24.0	18.7
Breaking length.	4130	4160	5310	5160	4085	3400
Tear factor.....	77	80	103	93	81	54
On 14 mesh.....	10.2	11.4	26.7	22.9	14.7	1.8
On 28 mesh.....	44.4	43.3	42.7	44.0	41.4	34.6
Through 28 mesh	45.4	45.3	30.6	33.1	43.9	63.6

There is no significant difference in any property between the third shipment from the new source and shipments from the old source. The fractionator proved exceedingly useful in analyzing the early differences.

The last column shows the result of an experiment softening the pulp too much, presumably through over-bleaching. The change in classification is particularly striking.

Experiment O

Action of the Kollergang

This table shows the effect on fiber length of kollergang treatment of a weak bleached sulphite pulp.

Revolutions per gram.....	0	4	8
Specific volume	1.79	1.60	1.51
Burst factor	19.1	22.2	22.2
Breaking length	2940	3810	4230
Tear factor.....	130	108	82
On 28 mesh.....	76.8	60.2	43.0
On 100 mesh.....	10.0	18.4	27.0
Through 100 mesh.....	13.2	21.0	30.0

Again the fractionator is shown to be more sensitive to changes in fiber length than is the tear test.

Experiment P

Laboratory vs. Mill Beating*

It was desired to match mill beating as closely as possible in the laboratory by a suitable combination of disintegration in the standard apparatus at 3 per cent and laboratory kollergang treatment.

	Lab.	Mill	Lab.	Mill
Specific volume.....	1.70	1.66	1.68	1.69
Burst factor	29.9	29.1	27.5	31.0
Breaking length.....	4520	4580	4470	4520
Tear factor.....	101	97	96	96
On 20 mesh.....	50.2	40.2	39.9	38.6
On 48 mesh.....	16.8	21.2	19.6	22.8
Through 48 mesh.....	33.0	38.6	40.5	38.6

The first pair of tests shows the results of disintegration alone; if no classifier were available the laboratory treated stock would be considered a good match for the other, except for the difference in specific volume, but the unique information provided by this new instrument proves that the two stocks are dissimilar.

Another trial, shown in the second pair of tests, which included a combination of disintegration and kollergang treatment, led to a nearly perfect match for the mill prepared stock in all properties.

* For obvious reasons slight equivalent changes have been made in these results which, however, in no way affect their relationship.

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(7) J. S. Hart, H. R. Patton and H. Wyatt Johnston, *Pulp Paper, Canada* 22: 252-57 (Feb. 25, 1932).

Imports of Paper and Paper Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard, Wallboard, Cigarette Papers, Sulphite, Kraft and Ground Wood Pulp.

NEW YORK IMPORTS

WEEK ENDING APRIL 15, 1939

SUMMARY

Cigarette paper....20 cs.
Wall paper....1 cs.
Paper hangings....2 bls., 2 cs.
Newsprint....3,550 rolls
Printing paper....93 rolls, 219 cs.
Wrapping paper....81 bls., 1,785 rolls, 13 cs.
Packing paper....50 bls., 24 rolls, 10 cs.
Kraft paper....64 rolls.
Filter compound....100 bls.
Filter paper....16 bls., 27 cs.
Drawing paper....161 cs.
Surface baryta coated paper....212 crates, 21 cs.
Surface coated paper....93 cs.
Metal covered paper....44 cs.
Basic paper....34 crates, 341 cs.
Photo paper....4 cs.
Decalcomania paper....10 drums, 39 cs.
Decalcomanias....32 cs.
Transfer paper....6 cs.
Transfer pictures....6 cs.
Tracing cloth....74 cs.
Colored paper....1 cs.
Paper tubes....122 cs.
Miscellaneous paper....1,697 rolls, 439 bls., 117 cs.

CIGARETTE PAPER

Globe Shipping Co., *Exochorda,* Marseilles, 20 cs.

WALL PAPER

——, *Bremen,* Bremen, 1 cs.

PAPER HANGINGS

W. H. S. Lloyd & Co., *American Farmer,* London, 2 cs., 2 bls.

NEWSPRINT

Jay Madden Corp., *Pr. Harding,* Finland, 1,342 rolls.
N. Y. Evening Journal, *Hammaren,* Kotka, 301 rolls.
Lunham & Reeve, Inc., *Hammaren,* Kotka, 373 rolls.
Jay Madden Corp., *Hammaren,* Kotka, 159 rolls.
Nolan Bowmall & Co., Inc., *Temnaren,* Gothenburg, 116 rolls.
Jay Madden Corp., *St. Louis,* Finland, 461 rolls.
Perkins Goodwin & Co., *St. Louis,* Hamburg, 75 rolls.
Nolan Bowmall & Co., Inc., *Drottingholm,* Gothenburg, 73 rolls.
Jay Madden Corp., *Scanstates,* Kotka, 650 rolls.

PRINTING PAPER

Dingelstedt & Co., *St. Louis,* Hamburg, 72 rolls, 15 cs.
L. A. Consmiller, *Bremen,* Bremen, 184 cs.
Dinglestedt & Co., *Bremen,* Bremen, 21 rolls.
Rohner Gehrig & Co., *Bremen,* Bremen, 1 cs.
Steiner Paper Corp., *Gerolstein,* Antwerp, 9 cs.

WRAPPING PAPER

Lansen Naeve Corp., *Pr. Harding,* Hamburg, 9 cs.
Jay Madden Corp., *Pr. Harding,* Finland, 65 bls., 81 rolls.
——, *Temnaren,* Gothenburg, 16 bls., 1,704 rolls.
Phoenix Shipping Co., *St. Louis,* Hamburg, 4 cs.

PACKING PAPER

Rohner Gehrig & Co., *Temnaren,* Gothenburg, 24 rolls.
Burroughs Wellcome & Co., *American Farmer,* London, 10 cs.
J. P. Heffernan Paper Co., *Exochorda,* Genoa, 50 bls.

KRAFT PAPER

Salwen Paper Co., *Drottningholm,* Gothenburg, 64 rolls.

FILTER COMPOUND

——, *Pr. Harding,* Hamburg, 100 bls.

FILTER PAPER

H. Reeve Angel & Co., Inc., *Pr. Harding,* Hamburg, 5 cs.
E. H. Sargent Co., *Drottningholm,* Gothenburg, 7 cs.
H. Reeve Angel & Co., Inc., *American Farmer,* London, 10 cs.
H. Reeve Angel & Co., Inc., *Aquitania,* Southampton, 5 cs., 16 bls.

DRAWING PAPER

Keuffel & Esser Co., *Pr. Harding,* Hamburg, 134 cs.
F. Weber Co., *St. Louis,* Hamburg, 9 cs.
International F'd'g Co., *St. Louis,* Hamburg, 1 cs.
——, *St. Louis,* Hamburg, 14 cs.
H. Reeve Angel & Co., Inc., *American Farmer,* London, 3 cs.

SURFACE BARYTA COATED PAPER

Globe Shipping Co., *St. Louis,* Hamburg, 186 crates.
L. A. Consmiller, *Bremen,* Bremen, 21 cs.
Globe Shipping Co., *Bremen,* Bremen, 26 crates.

SURFACE COATED PAPER

Chase National Bank, *St. Louis,* Hamburg, 4 cs.
C. Happel, *St. Louis,* Hamburg, 5 cs.
Dingelstedt & Co., *Gerolstein,* Antwerp, 84 cs.

METAL COVERED PAPER

K. Pauli Co., *St. Louis,* Hamburg, 44 cs.

BASIC PAPER

Globe Shipping Co., *St. Louis,* Hamburg, 34 crates, 143 cs.
Dingelstedt & Co., *Bremen,* Bremen, 10 cs.
Globe Shipping Co., *Bremen,* Bremen, 188 cs.

PHOTO PAPER

Heemsoth Kerner Corp., *St. Louis,* Hamburg, 4 cs.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., *Andania,* Liverpool, 36 cs., 10 drums (duplex), 3 cs. (simplex).

DECALCOMANIAS

Sellers Transportation Co., *Bremen,* Bremen, 31 cs.
Phoenix Shipping Co., *Bremen,* Bremen, 1 cs.

TRANSFER PAPER

M. J. Corbett & Co., *Zaandam,* Rotterdam, 6 cs.

TRANSFER PICTURES

Rohner Gehrig & Co., *Bremen,* Bremen, 6 cs.

TRACING CLOTH

E. Dietzgen & Co., *Laconia,* Liverpool, 13 cs.
Keuffel & Esser Co., *Laconia,* Liverpool, 18 cs.
C. Bruning Co., *Bremen,* Bremen, 41 cs.
Titan Shipping Co., *Bremen,* Bremen, 2 cs.

COLORED PAPER

D. C. Andrews & Co., *Bremen,* Bremen, 1 cs.

PAPER TUBES

——, *St. Louis,* Hamburg, 122 cs.

MISCELLANEOUS PAPER

E. H. Sargent Co., *Temnaren,* Gothenburg, 2 cs.
Remington Rand, Inc., *Grete Maersk,* Kobe, 6 cs.
Japan Paper Co., *Grete Maersk,* Kobe, 96 cs.
The Borregaard Co., Inc., *Drottningholm,* Gothenburg, 229 bls., 1,697 rolls.
F. J. Kramer & Co., *Drottningholm,* Gothenburg, 210 bls.
G. H. McFadden & Bro., *Bremen,* Bremen, 2 cs.
Horman Schutte & Co., Inc., *Exochorda,* Genoa, 11 cs.

RAGS, BAGGINGS, ETC.

J. Cohen & Son Co., Inc., *Andania,* Liverpool, 10 bls. rag cuttings.
———, *Andania,* Liverpool, 13 bls. scrap cloth, 134 bls. rags, 9 bls. threadwaste.
Manufacturers Trust Co., *Andania,* Liverpool, 20 bls. threadwaste, 13 bls. rags.
R. & V. Miller, Inc., *Temnaren,* Gothenburg, 8 bls. rags.
Manufacturers Trust Co., *Gudrun Maersk,* London, 32 bls. rags.
D. M. Hicks, Inc., *Norefjord,* London, 43 bls. waste strings.
J. T. Flannery, Co., *Norefjord,* London, 48 bls. paper stock.
Victory Shipping Co., *Norefjord,* London, 7 bags waste paper.
Darmstadt Scott & Courtney, *Norefjord,* Antwerp, 73 bls. bagging.
W. Steck & Co., *Norefjord,* Antwerp, 80 bls. old string.
G. W. Millar & Co., Inc., *Zaandam,* Rotterdam, 37 bls. old waste.
———, *St. Louis,* Hamburg, 77 bls. rags.
D. Benedetto, Inc., *Tonsbergfjord,* Alexandria, 40 bls. rags, 54 bls. bagging.
National City Bank, *Exiria,* Sfax, 14 bls. rags.
J. T. Flannery Co., *Exiria,* Sfax, 1 ble. rags.
J. Cohen & Son Co., Inc., *Laconia,* Liverpool, 13 bls. rags, 16 bls. paper stock.
Manufacturers Trust Co., *Laconia,* Liverpool, 22 bls. rags.
National City Bank, *Kim,* Murmansk, 876 bls. linen thread waste, 616 bls. flax waste.
Chase National Bank, *Kim,* Murmansk, 24 bls. linen cuttings, 401 bls. bleached linters.
Public National Bank Trust Co., *American Farmer,* London, 9 bls. rags.
Manufacturers Trust Co., *American Farmer,* London, 3 bls. rags.
O'Brien Padawer Co., *Eidsvold,* Bombay, 250 bls. cotton waste.
D. S. Stern, *Eidsvold,* Bombay, 200 bls. cotton waste.
———, *Eidsvold,* Bremen, 28 bls. rags.
W. Steck & Co., *Exochorda,* Alexandria, 63 bls. bagging, 67 bls. hessians.
R. Blank, *Exochorda,* Alexandria, 40 bls. rags, 131 bls. old cottons.
Chase National Bank, *Exochorda,* Alexandria, 80 bls. bagging.
———, *Exochorda,* Alexandria, 67 bls. bagging, 90 bls. rags.
D. Benedetto, Inc., *Exochorda,* Alexandria, 141 bls. rags.

GLUE STOCK, ETC.

Irving Trust Co., *Norefjord,* Antwerp, 282 bls. glue stock.
———, *Laconia,* Liverpool, 243 bags hide cuttings.
———, *Saturnia,* Trieste, 200 bags hide glue, (ground); 150 bags bone glue, (sheets).

OLD ROPE

———, *Sarcoxie,* Leith, 92 coils.
Bemis, Bros., Bag Co., *Norefjord,* London, 58 coils.
A. H. Searle, *Norefjord,* London, 58 coils.
W. Steck & Co., *Norefjord,* London, 70 coils.
———, *American Farmer,* London, 134 coils.
W. Steck & Co., *Exochorda,* Marseilles, 57 bls.
Chase National Bank, *Toronto City,* Bristol, 79 coils.

WOOD PULP

Bank of N. Y. Trust Co., *St. Louis,* Hamburg, 405 bls. wood pulp, 81 tons.
Pulp Sales Corp., *Scanstates,* Kotka, 6,160 bls. sulphite, 1,203 tons; 1,135 bls. mechanical pulp, 224 tons; 587 bls. sulphate, 117 tons.

WOOD PULP BOARDS

———, *Hammaren,* Kotka, 256 rolls.
H. Fuchs & Son, *Temnaren,* Gothenburg, 70 crates.
Fibre Case & Novelty Co., *Temnaren,* Gothenburg, 10 bls.
———, *St. Louis,* Hamburg, 54 bls., (sheets).
Jay Madden Corp., *Scanstates,* Kotka, 56 rolls, 20 ctns., 52 bls

ALBANY IMPORTS

WEEK ENDING APRIL 15, 1939

Perkins Goodwin & Co., *Ringar,* Woodfibre, B. C., 2,660 bls. bleached wood pulp, 1,064 tons
Acer & Co., *Ringar,* Woodfibre, B. C., 1,140 bls. bleached wood pulp, 456 tons.

BOSTON IMPORTS

WEEK ENDING APRIL 15, 1939

Irving Trust Co., *Sarcoxie,* Leith, 56 bls. rags.

PHILADELPHIA IMPORTS

WEEK ENDING APRIL 15, 1939

Paper House of Penna., *Hammaren,* Kotka, 76 rolls newsprint.
J. W. Hampton, Jr., & Co., *Hammaren,* Kotka, 285 rolls newsprint.
Winkinson Bros., & Co., Inc., *Hammaren,* Kotka, 145 rolls newsprint.
Jay Madden Corp., *Hammaren,* Kotka, 40 bls. wood pulp boards.
Bulkley Dunton Pulp Co., Inc., *Temnaren,* ———, 500 bls. sulphite.
Castle & Overton, Inc., *Temnaren,* Gothenburg, 299 bls. sulphite.
Perkins Goodwin & Co., *Temnaren,* Gothenburg, 419 bls. sulphite.
———, *Temnaren,* Gothenburg, 240 bls. chemical pulp.
Nolan Bowmall & Co., Inc., *Temnaren,* Gothenburg, 36 rolls newsprint.
Parsons & Whittemore, Inc., *Temnaren,* Gothenburg, 200 rolls newsprint.
The Borregaard Co., Inc., *Temnaren,* Gothenburg, 37 rolls, 10 bls. paper.
E. J. Keller Co., Inc., *Tonsbergfjord,* ———, 67 bls. rags.
Jay Madden Corp., *Scanstates,* Kotka, 156 rolls newsprint.
J. W. Hampton, Jr., & Co., *Scanstates,* Kotka, 87 rolls newsprint.
Public Ledger, Inc., *Scanstates,* Kotka, 562 rolls newsprint.

WILMINGTON IMPORTS

WEEK ENDING APRIL 15, 1939

Jay Madden Corp., *Hammaren,* Kotka, 127 rolls newsprint; 500 rolls wood pulp boards.
Pulp Sales Corp., *Hammaren,* Kotka, 5,634 bls. sulphite.
Bulkley Dunton Pulp Co., Inc., *Hammaren,* ———, 300 bls. sulphite, 50 tons.

BALTIMORE IMPORTS

WEEK ENDING APRIL 15, 1939

Pulp Sales Corp., *Hammaren,* Kotka, 185 bls. sulphite, 750 bls. sulphate.
Jay Madden Corp., *Hammaren,* Kotka, 2,016 rolls newsprint.
Wilkinson Bros., & Co., Inc., *Hammaren,* Kotka, 132 rolls newsprint.
F. H. Shallus, *Hammaren,* Kotka, 173 rolls newsprint.
Pulp Sales Corp., *Hammaren,* Helsingfors, 3,686 bls. sulphite.
Nolan Bowmall & Co., Inc., *Temnaren,* Gothenburg, 272 rolls newsprint.
Parsons & Whittemore, Inc., *Temnaren,* Gothenburg, 141 rolls newsprint.
———, *Temnaren,* Gothenburg, 238 bdls. wall board.
M. Sone, *Temnaren,* Gothenburg, 652 bls. wood pulp.
The Borregaard Co., Inc., *Temnaren,* Gothenburg, 1,000 bls. wood pulp.
M. Sone, *Sarcoxie,* Hamburg, 650 bls. wood pulp.
Congoleum Nairn Co., *Norefjord,* Antwerp, 138 bls. rags.
M. Sone, *Svaneholm,* Gothenburg, 550 bls. wood pulp.

NORFOLK IMPORTS

WEEK ENDING APRIL 15, 1939

———, *Sarcoxie,* Hamburg, 192 rolls newsprint; 346 rolls paper.
Reliance Bagging Co., *Eidsvold,* Bombay, 277 bls. rags.

Control of AC Rotor Motors

A folder issued by The Electric Controller & Manufacturing Company, 2700 East 79th street, Cleveland, O., describes the EC&M system of frequency relay magnetic control. The company states the system has already won wide recognition in connection with cranes, hoists, and other industrial drives, of the reversing and non-reversing type, in paper mills and in other industrial plants.

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New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, April 19, 1939.

The volume of business in the wholesale paper market for the current week is a little lower in some grades of paper, as general business activity has slightly declined from the previous week. It is generally conceded that the war crisis in Europe, which has had a depressing affect on the security and commodity markets, is largely responsible for the slowing down of industry and trade. Business on the whole has become more hesitant, and cautious buying in relative small quantities for immediate needs, is indicated in the reports received from the trade.

The index of general business activity is lower for the week ended April 8 and the production ratio of nearly 200 paper mills declined from 85.6 per cent on April 1 to 83.0 per cent on April 8, compared with 67.3 per cent for the week ended April 9 last year. Paper board production for the like period was 71.0 per cent, compared with 74.0 per cent on April 1, and with 58.0 per cent for the week ended April 9 last year.

The newsprint situation is little changed for the week. Consumption continues below expectations and the pick-up in advertising lineage is slow. Prices remain firm, with the dual-price basis of $48 to $50 per ton, unchanged.

Little change in the demand for paper and paper board is indicated in the reports received from manufacturers' representatives, jobbers, and general paper merchants for this week. A somewhat firmer market is reflected in some grades of sulphite papers and sales of some grades of groundwood papers are reported as being well maintained. No important change in the demand for book papers is reported for the current week. Prices on all grades of paper are firm at what is conceded to be a low level and inadequate for equitable profits.

Kraft paper continues to be well maintained with production and orders well balanced and the current situation in this division of the industry is favorable.

The paper board market continues strong and while a small decline in sales volume is reported in some quarters of this market, current activity is encouraging and the outlook is good.

Mechanical Pulp

No important change in the market situation in mechanical pulp has been reported this week. Prices remain firm at prevailing quotations at from $29 to $33 per ton on No. 1 domestic and Canadian, and at from $25 to $28 per ton for the like grade of moist and dry European pulp.

Chemical Pulp

A little more firmness appears in the market situation of good grades of unbleached sulphite pulp this week. Other grades of pulp are substantially unchanged. The volume of current sales is running approximately 15 per cent higher than at this period last year. Prices on all grades are relatively firm and continue unchanged for the current week.

Old Rope and Bagging

No increase in the volume of business in old rope has occurred during the week. Mill buying is reported as continuing at a limited rate and prices continue unchanged at prevailing levels. Demand for old bagging continues light on all grades excepting roofing bagging, which is in good demand with prices firm and unchanged for the week.

Rags

The domestic rag market continues firm, with the demand for No. 1 white shirt cuttings good and collections lower as less cuttings on white shirts are made at this season of the year. Recent heavy exports on this grade are reported to have cleaned up the supply. No important change in prices are reported on any grade of new and old domestic rags. The foreign rag market, other than the export activity on white rags, continues inactive and prices are nominal.

Old Waste Paper

The old waste paper market continues steady, with prices on all grades holding firm and unchanged at prevailing quotations. Mill demand continues good as paper board production continues at a relatively high level and about 13 per cent higher than at this period last year.

Twine

No important change in demand or prices has been reported in any grade of hard or soft fiber twine for the current week. In general, this market is firm and no definite trend is at this date apparent.

Elected Director of Great Lakes Co.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., April 17, 1939—At a meeting of the Great Lakes Paper Company, Port Arthur, Ont., Thomas Bradshaw, of Toronto, was elected to the Board of Directors. He is a former city treasurer of Toronto and president of the North American Life Assurance Company.

Scott Paper Co. To Hold Conference

[FROM OUR REGULAR CORRESPONDENT]

CHESTER, Pa., April 17, 1939—A Retail Divisional Managers Sales Conference of the Scott Paper Company is to be held here April 24, 25 and 26.

West Virginia Pulp and Paper Company

230 Park Ave.
New York

35 East Wacker Drive
Chicago

Public Ledger Building
Philadelphia, Pa.

503 Market St.
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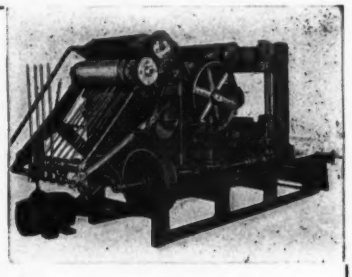

PRINTING PRESSES
Rotary — Multi-color
Oil Ink — Arc-type
Analine — In series
Bag and Notion Envelope

EMBOSSERS
1. Glassine
2. Board
3. Towel
4. Tissue
5. Napkin
6. Wrapping
7. Special Purpose

MISCELLANEOUS
Toilet Roll Wrappers
Vacuum Pumps
Seat Cover Machines
Die Inkers
Core Machines
Core Recutters

FOLDERS
Towel — Wax
Tissue — Facial Tissue
Napkin — Table Covers

WINDERS
Toilet — Crepe
Towels — Jumbo Roll

CREPE MACHINE
Tissue — Kraft
Waterproof

BUNDLING PRESSES
Adjustable — Napkin
Multi-Wall Bag

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GREEN BAY, WISCONSIN
Manufacturers of paper converting machinery for all purposes.

Only **THE APPLETON-WAGNER FLAT SCREEN offers all of these operating ADVANTAGES**

No Cams • No Shaft • No Roller Shoes • No Individual Eccentrics • No Toe-Blocks • No Adjustments • Few Wearing Parts • Noiseless Operation • No Jumping or Pounding • Greater Efficiency • Screens More Stock • No Damage to Fibres • Less Driving Power • Little Lubrication • Smoother Performance • Greater Flexibility • Simplified Design • Simpler Operation • Only Three Bearings • Rugged Construction • Any Specified Vat • Little Maintenance •

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THE APPLETON MACHINE COMPANY Appleton, Wisconsin

THE DRAPER FELTS

All kinds and styles of Felts for all kinds and styles of Papers.

Write us about your Felt problems and let us help you reduce your Felt Costs—we will call anywhere at any time.

DRAPER BROS. COMPANY

CANTON, MASS.

Woolen manufacturers since 1856

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, April 19, 1939.

BLANC FIXE—Quotations on blanc fixe remain firm and conform to prevailing market prices. The pulp is quoted at from $42.50 to $45 per ton, in bulk; the powder is offered at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER—Prices on bleaching powder continue firm and unchanged at prevailing market levels. Bleaching powder is quoted at from $2 to $2.25 per 100 pounds, in drums, at works.

CASEIN—The demand for casein is reported as fair for the current week. Standard domestic casein, 20-30 mesh, is quoted at from 7½ to 8 cents per pound; 80-100 mesh, at from 8 to 8½ cents per pound. All prices in bags, car lot quantities.

CAUSTIC SODA—Quotations on caustic soda remain unchanged at prevailing market levels. Solid caustic soda is quoted at from $2.10 to $2.30 per 100 pounds; flake and ground at from $2.50 to $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—Prices on china clay continue firm and conform to prevailing market quotations. Imported clay is quoted at from $13 to $25 per ton, ship side. Domestic filler clay is offered at from $6.50 to $12 per ton; coating clay at from $11 to $22 per ton, at mines.

CHLORINE—Quotations on chlorine are firm and unchanged at prevailing market prices. Chlorine is quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The demand for rosin is reported good for the current week. "G" gum rosin is quoted at $4.65; "F" gum and "FF" wood rosin at $4.10, per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent gum rosin size is offered at $2.65 per 100 pounds, f.o.b., shipping point.

SALT CAKE—Quotations on salt cake continue firm and unchanged at prevailing market levels. Prices range at from $12 to $13.50 per ton; chrome salt cake at from $11 to $12 per ton, f.o.b., shipping point. Imported salt cake is offered at from $14.50 to $15 per ton, Gulf or Atlantic Seaboard, on dock.

SODA ASH—Prices on soda ash are firm and conform to prevailing market quotations. Quotations on soda ash in car lots, at works, per 100 pounds, are as follows: in bulk, $.90; in bags, $1.05; and in barrels, $1.35.

STARCH—The demand for corn starch is reported as good for the current week. Quotations remain unchanged at prevailing market quotations. Globe pearl is quoted at $2.50 per 100 pounds; special paper starch is offered at $2.60 per 100 pounds. All prices in bags, car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Prices on sulphate of alumina are firm and continue unchanged at prevailing market quotations. The commercial grades are quoted at $1.15; iron free at $1.30, per 100 pounds, in bags, car lot quantities, f.o.b., works.

SULPHUR—Quotations on sulphur are firm and conform to prevailing market levels. Annual contracts are quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are offered at $19 per ton.

TALC—Prices on talc are firm and continue unchanged at prevailing market quotations. Domestic talc is offered at from $15 to $18 per ton, f.o.b., mines. Imported talc is quoted at from $25 to $40 per ton, on dock.

Market Quotations

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	@	—
Kraft—per cwt.—Delivered Zone A			
No. 1 Northern	$4.75	@	$5.25
Superstandard	4.12½	@	4.62½
Northern Standard Wrapping	4.00	@	—
Standard Wrapping	3.50	@	—
Tissues—Per Ream—Carlots			
White No. 1	.92½	@	—
White No. 1 M. G.	.90	@	—
White No. 1½	.67½	@	—
White No. 2	.60	@	—
Anti-Tarnish M. G.	.75	@	—
Colored	.87½	@	—
Kraft	.75	@	—
Manila	.60	@	—
Unbl. Toilet, 1 M.	3.20	@	—
Bleached Toilet	5.26	@	—
Paper Towels—			
Unbleached	1.80	@	—
Bleached	2.10	@	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	7.75	@	9.75
No. 1 Manila Wrapping, 35 lb.	5.00	@	—
No. 2 Manila Wrapping, 35 lb.	4.75	@	—
Boards, per ton—			
News	$30.00	@	$32.50
Chip	30.00	@	32.50
Sgl. Mla. Lt. Chip	42.50	@	—
Jute Lined Chip	42.50	@	45.00
White Pat. Coated	55.00	@	57.50
Kraft Liners	45.00	@	—
Binders Boards	71.00	@	77.00

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
100% Rag Ext. No. 1	$39.10	@ $46.00	$40.25	@ $47.25
100% Rag	31.05	@ 36.50	32.20	@ 37.75
85% Rag	.....		29.90	@ 35.00
75% Rag	23.60	@ 27.75	24.75	@ 29.00
65% Rag	.....		21.65	@ 26.25
50% Rag	17.55	@ 21.50	18.70	@ 22.75
25% Rag	14.65	@ 17.75	15.80	@ 19.25

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
No. 1	$8.60	@ $10.50	$9.75	@ $12.00
No. 2	7.70	@ 9.50	8.90	@ 10.75
No. 3	6.85	@ 8.25	8.00	@ 9.75
No. 4	7.00	@ 8.50	8.20	@ 10.00

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper.

Delivered in Zone 1:

No. 1 Glossy Coated	$11.30	@	$12.75
No. 2 Glossy Coated	9.70	@	11.00
No. 3 Glossy Coated	8.60	@	10.00
No. 4 Glossy Coated	8.05	@	9.25
No. 1 Antique (watermarked)	8.05	@	9.25
No. 2 Offset	7.45	@	8.50
A Grade E. F.	7.20	@	8.25
A Grade S. & S. C.	7.45	@	8.50
B Grade E. F.	6.65	@	7.75
B Grade S. & S. C.	6.90	@	8.00
C Grade E. F.	6.40	@	7.50
C Grade S. & S. C.	6.65	@	7.75
D Grade E. F.	6.10	@	7.00
D Grade S. & S. C.	6.35	@	7.25

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	25.00	@	26.00
Dry	25.00	@	28.00
(Delivered)			
No. 1 Domestic and Canadian	29.00	@	33.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	2.25	@	2.75
Prime Qualities—			
Easy-Bleaching Sulphite	1.90	@	2.00
Strong Unbleached Sulphite	1.80	@	1.95
(On Dock, Atlantic Ports)			
Kraft Bleached	2.50	@	2.75
Kraft Light & Strong	1.60	@	1.75
Kraft No. 1	1.45	@	1.60
Kraft No. 2	1.35	@	1.40
(F. o. b. Pulp Mill)			
Kraft Domestic	1.25	@	1.75
(Delivered)			
Soda Bleached	2.55	@	—

Add 60 cents per short ton, dock charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	6.85	@	7.15
Silesias No. 1	4.00	@	4.25
New Unbleached	6.75	@	7.00
Blue Overall	4.90	@	5.00
Fancy	2.00	@	2.15
Washables	1.50	@	1.60
Mixed Khaki Cuttings	3.00	@	3.25
O. D. Khaki Cuttings	4.00	@	4.10

Old Rags

White, No. 1—			
Repacked	2.90	@	3.15
Miscellaneous	2.10	@	2.25
White, No. 2—			
Repacked	1.50	@	1.60
Miscellaneous	1.25	@	1.40
Thirds and Blues—			
Repacked	1.30	@	1.40
Miscellaneous	1.15	@	1.20
Roofing Rags—			
No. 1	1.05	@	1.10
No. 2	.90	@	.95
No. 3 (bagging)	.55	@	.65
No. 4	.60	@	.65
No. 5A	.60	@	.65

Foreign Rags

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	@	2.20
New Light Silesias	5.50	@	5.75
Light Flannelettes	5.50	@	5.75
New White Cuttings	7.00	@	7.50
New Light Oxford	4.00	@	4.50
New Light Prints	3.00	@	3.25

Old Rags

No. 1 White Linens	7.50	@	8.50
No. 2 White Linens	6.50	@	7.50
No. 3 White Linens	4.50	@	—

SONOCO
SPIRAL WOUND RETURNABLE AND NON-RETURNABLE
PAPER CORES

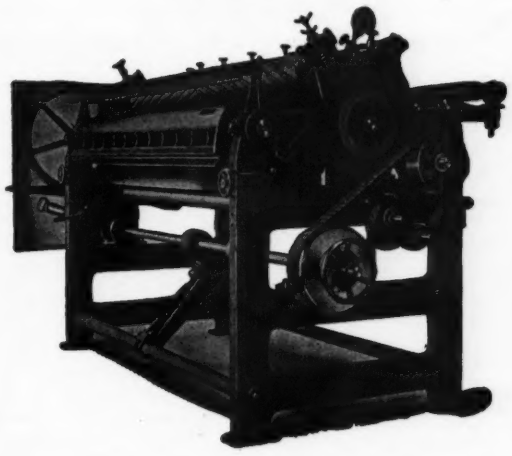
You Can't Ask Too Much

Hard usage of Sonoco Cores is what is expected of them.

Under constant improvement, our cores meet every demand because we build Sonoco Cores on scientific construction principles and of special paper. You can't ask too much of Sonoco Cores.

SONOCO PRODUCTS COMPANY
BRANTFORD, ONT. HARTSVILLE, S.C. MYSTIC, CONN.

MODEL 28
ROLLER BEARING CUTTER



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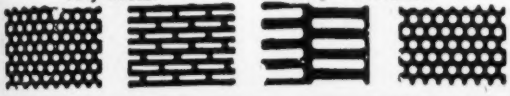
LAWRENCE, MASS.
MAKERS OF
SINGLE, DUPLEX AND DIAGONAL PAPER CUTTERS.
CUTTER KNIVES. PATENT TOP SLITTERS.

Pulp and Paper Mill Screens
Of Stainless Steel—Copper—Bronze—Monel—
Chemical Resisting Alloys
Perforations that are accurate in size
Any Metal Any Perforation



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LANGSTON SLITTERS AND ROLL WINDERS
for every job from tissue to heavy board . . . narrow to wide cuts . . . small to large diameters.
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CLINTON STARCHES
Special Grades for Beater and Top Sizing
Manufactured by
CLINTON COMPANY
CLINTON, IOWA
QUALITY SERVICE

Condor Compensated
THE LOW TENSION RUBBER BELT
with equalized ply stresses.
THE MANHATTAN RUBBER MFG. DIVISION
OF RAYBESTOS-MANHATTAN, INC.
EXECUTIVE OFFICES AND FACTORIES, PASSAIC, NEW JERSEY

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"EVOLVED THRU RESEARCH"
FOR BETTER PAPER PRODUCTION
Foam Killers • Defoamers and Eveners • Sulphonated Oils
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Soaps • Felt Washing Compounds • Glycerine Substitutes
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DE LAVAL Steam Turbine Co. TRENTON, N.J.
Manufacturers of Steam Turbines; Pumps—Centrifugal, Propeller, Rotary Displacement, Centrifugal Blowers and Compressors; Worm Gears; Helical Gears; Hydraulic Turbines and Flexible Couplings . . . Sole Licensees of the Bauer-Wach Exhaust Turbine System

No. 4 White Linens.	2.25	@	3.25
No. 1 White Cotton.	4.25	@	4.75
No. 2 White Cotton.	3.25	@	3.75
No. 3 White Cotton.	2.50	@	3.00
No. 4 White Cotton.	1.90	@	2.20
Extra Light Prints..	2.00	@	2.40
Ord. Light Prints...	1.75	@	2.15
Med. Light Prints...	1.55	@	1.95
Dutch Blue Cottons.	2.25	@	2.50
French Blue Linens..	3.00	@	—
Checks and Blues...	2.00	@	—
Linsey Garments....	1.90	@	2.00
Dark Cottons.....	1.50	@	1.60
Old Shopperies.....	1.30	@	1.45
New Shopperies.....	1.45	@	1.50
French Blues.....	2.25	@	2.50

Old Rope and Bagging

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	1.75	@	1.90
Domestic	1.75	@	1.80
Wool Tares, light...	1.60	@	1.70
Wool Tares, heavy..	1.80	@	1.90
Bright Bagging.....	1.60	@	1.70
Manila Rope—			
Foreign 2.60		@	2.75
Domestic	2.00	@	3.00
Jute Threads.....	2.75	@	3.00
Sisal Strings	1.50	@	1.60
Mixed Strings....	.55	@	.60

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	2.30	@	2.40
Ordinary Hard White No. 1....	1.90	@	2.00
Soft White No. 1..	1.60	@	1.75
Soft White Extra..	2.25	@	2.40
Flat Stock—			
Stitchless	.80	@	.85
Overissue Mag	.70	@	.75
Solid Flat Book...	.55	@	.60
Crumbled No. 1...	.40	@	.45
Ledger Stock White.	1.10	@	1.20
Ledger Stock Colored	.60	@	.70
New B. B. Chips....	.15	@	.20
Manila—			
New Env. Cut....	1.40	@	1.50
New Cuttings.....	1.00	@	1.20
Old Kraft Machine— Compressed bales.	.65	@	.70
News—			
No. 1 White News	1.25	@	1.30
Strictly Overissue.	.40	@	.45
Strictly Folded....	.37½	@	.42½
No. 1 Mixed Paper..	.17½	@	.22½

Twines

(F. o. b. Mill)
(Soft Fiber)

Coarse Polished—			
India	.12¾	@	.14¼
White Hemp.....	.13¾	@	.15¼
Fine Polished—			
Fine India.....	.16	@	.18
Unpolished—			
Box	.09½	@	—
Paper Makers.....	.09½	@	.10½
Tube Rope.....	.10¼	@	.12½
Wall Paper.....	.10¼	@	.12½
Wrapping	—	@	—
Soft Fiber Rope...	.12	@	.14
Cotton	.17	@	.20
(Hard Fiber)			
Medium Java.....	.11	lb	.17
Mex. Sisal.....	.10	@	.16
Manila	.16	@	.23

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f, o. b. Phil.)

Shirt Cuttings—			
New White, No. 1.	.06½	@	.07
New White, No. 2.	.03½	@	.04
Light Silesias.....	.03½	@	.04
Silesias, No. 1....	—	@	.04½
Black Silesias, soft	—	@	.03
New Unbleached..	.05½	@	.06
Washable, No. 1..	.01½	@	.01¼
Blue Overall.....	.04½	@	.05
Cottons—According to grades—			
Washable No. 2...	.01	@	.01¼
New Blue.....	.01	@	.01¼
Fancy Percales...	—	@	.02½
New Black Soft...	.03	@	.03½
New Light Seconds	—	@	.04½
New Dark Seconds	.50	@	.75
Khaki Cuttings—			
No. 1 O. D.....	.03	@	.03½
No. 2 Mixed.....	.02	@	.02½
Corduroy	—	@	.02
New Canvas.....	.05	@	.05½
New Black Mixed.	.02½	@	.02¾

Domestic Rags (Old)

White No. 1—			
Repacked	2.75	@	3.00
Miscellaneous	2.00	@	2.25
Thirds and Blues—			
Miscellaneous	1.00	@	1.25
Repacked	1.50	@	1.75
Black Stockings (Export)	3.00	@	3.50
Roofing Stock—			
Foreign No. 1....	—	@	1.10
Domestic No. 1...	—	@	1.05
Domestic No. 2...	—	@	.85
Roofing Bagging..	—	@	.75

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.65	@	1.75
Domestic	1.50	@	1.75
Manila Rope.....	—	@	3.00
Sisal Rope.....	1.50	@	1.75
Mixed Rope.....	.75	@	1.00
Scrap—			
No. 1.....	—	@	1.75
No. 2.....	.95	@	1.00
Wool Tares, heavy..	3.25	@	3.50
Mixed Strings.....	.45	@	.50
No. 1 New Light Burlap	2.50	@	3.00
New Burlap Cuttings	1.75	@	2.00

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 2 Hard White	2.25	@	2.30
No. 2 Hard White	1.90	@	2.00
No. 1 Soft White.	1.75	@	1.80
No. 2 Soft White.	1.30	@	1.40
No. 1 Mixed.....	.65	@	.75
Solid Ledger Stock..	1.45	@	1.50
Ledger Stock, white.	1.15	@	1.20
Ledger Stock, colored	.75	@	.80
No. 1 Books, heavy.	.60	@	.75
Manila Cuttings....	1.45	@	1.50
Print Manila.....	.45	@	.50
Container Manila..	.35	@	.40
Kraft Paper.....	.75	@	.80
No. 1 Mixed Paper..	.22½	@	.27½
Straw Board Chip...	.25	@	.30
Binders Board Chip.	.25	@	.30
Corrugated Board...	.50	@	.55
Overissue News.....	.40	@	.45
Old Newspapers....	.35	@	.40

BOSTON

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.25	@	2.50
No. 1 Soft White.	1.85	@	2.15
No. 2 Mixed.....	.75	@	.80
Solid Ledger Books..	1.30	@	—
Overissue Ledger Stock	1.30	@	1.50
Mixed Ledgers.....	.85	@	.90
No. 1 Books, heavy..	.65	@	.75
No. 1 Books, light..	.65	@	.75
Crumpled Stitchless Book Stock.....	.55	@	.65
Manila Env. Cuttings	1.70	@	1.85
Manila Envelope Cuttings, Extra Quality	2.00	@	2.10
No. 1 Old Manila...	.65	@	.70
White Blank News..	1.30	@	1.40
No. 1 Kraft.....	.70	@	.80
Mixed Papers.....	.15	@	.17½
Print Manila.....	.45	@	.55
Container Manilas..	.27½	@	—
Old Newspapers....	.30	@	.37½
Paper Wool Strings.	.50	@	.65
Overissue News.....	.45	@	.50
Box Board Chips....	.20	@	.25
Corrugated Boxes...	.35	@	.42½
Kraft corrugated boxes	.70	@	.75
Screening Wrappers.	.40	@	.45

Bagging

(F. o. b. Boston)

Manila Rope—			
Foreign	2.50	@	2.65
Domestic	2.65	@	2.75
Sisal Rope	1.75	@	1.85
Mixed Rope.....	.50	@	.60
Transmission Rope...	1.90	@	2.00
Soft Jute Rope	2.00	@	2.25
Jute Carpet Threads.	.75	@	.90
Gunny Bagging—			
Foreign	1.50	@	1.60
Domestic	1.35	@	1.40
Bleachery Burlap....	2.50	@	2.70
Scrap Burlap—			
Foreign	1.40	@	1.50
Domestic	1.25	@	1.40
Scrap Sisal.....	1.75	@	1.80
Scrap Sisal for Shredding	1.80	@	2.10
Wool Tares, Heavy..	1.40	@	1.50
New Burlap Cuttings	2.50	@	2.65
Aust. Wool Pouches.	2.00	@	2.25
Heavy baling bagging	1.60	@	1.75
Paper Mill Bagging.	1.00	@	1.15
No. 2 Bagging.....	.45	@	.60

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints...	.03¼	@	.03½
New White No. 1....	.06¾	@	.07
New Light Flannelettes	.05	@	—
Silesias No. 1.....	.04¼	@	—
New Black Silesias..	.03¾	@	.04
Soft Unbleached....	6.50	@	7.00
Blue Cheviots.....	.05	@	.05¼
Fancy	.02½	@	.03
Washable	.02¾	@	.03
Cottons—According to grades—			
Blue Overalls.....	.04¾	@	.05
New Black, soft...	.03¾	@	.04
Khaki Cuttings.....	.03	@	.03½
O. D. Khaki.....	—	@	.03½
Corduroy	.02¾	@	.02
New Canvas.....	.06¼	@	.07¼
B. V. D. Cuttings...	.06¼	@	.07

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04¼	@	—
White No. 1—			
Repacked	—	@	2.75
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous	2.00	@	2.25
Twos and Blues.....	1.75	@	2.00
Old Blue Overalls...	1.50	@	—
Thirds and Blues—			
Repacked	1.37½	@	1.75
Miscellaneous	1.25	@	1.62½
Black Stockings.....	3.90	@	4.00
Roofing Stock—			
No. 1.....	1.00	@	1.10
No. 2.....	.75	@	.85
No. 3.....	.65	@	.70

Foreign Rags

(F. o. b. Boston)

Dark Cottons.....	.90	@	1.05
Dutch Blues.....	2.65	@	2.75
New Checks and Blues	2.85	@	3.00
Old Fustians.....	2.25	@	2.50
Old Linsey Garments	2.20	@	2.25
New Silesias.....	3.75	@	4.00

CHICAGO

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings....	1.80	@	1.90
No. 1 Hard White.	1.70	@	1.80
No. 1 Soft White..	1.50	@	—
Ledger & Writings..	.75	@	.80
Solid Books.....	.45	@	.50
Blanks	.90	@	—
Krafts	.45	@	.50
New Kraft Cuts.....	1.10	@	—
Manila Env. Cuts...	Nominal		
Ex. No. 1 Manila...	Nominal		
Print Manila	Nominal		
Overissue News.....	.35	@	—
Old Newspapers—			
No. 1 Folded News	.25	@	.30
No. 1 Mixed Paper	.15	@	.20
Roofing Stocks—			
No. 1.....	1.00	@	1.05
No. 2.....	.85	@	—

TORONTO

Paper

Bonds

Direct mill shipment in two-ton lots

No. 1 White $35.50		@	—
No. 1 Tints	36.50	@	—
No. 2 White	25.50	@	—
No. 2 Tints	26.50	@	—
No. 2 Golden Rod..	27.50	@	—
No. 3 White	21.00	@	—
No. 4 White	15.00	@	—
No. 4 Tints	16.00	@	—
No. 4 Golden Rod...	17.00	@	—
Direct mill shipment in three-ton lots			
No. 5 White $10.50		@	—
No. 5 Tints	11.50	@	—
No. 5 Golden Rod..	12.00	@	—
No. 6 White	9.00	@	—
No. 6 Tints	9.50	@	—
No. 6 Golden Rod..	11.00	@	—
No. 7 White	8.00	@	—
No. 7 Tints	8.50	@	—
No. 7 Golden Rod..	10.00	@	—
Book—			
No. 1 M. F.	$7.00	@	—
No. 2 M. F.	6.50	@	—
No. 3 M. F.	5.35	@	—
No. 1 S. C.	7.25	@	—
No. 2 S. C.	6.75	@	—
No. 3 S. C.	5.85	@	—

Coated Book & Litho

Ton Lots (resale)

No. 1 .....$12.00		@	—
No. 2	10.25	@	—
No. 3	8.90	@	—
Coated tinted	13.00	@	—
Wrapping—delivered—			
Rag Brown.....	4.85	@	5.25
White Wrap.....	4.00	@	—
"B" Manila.....	4.90	@	6.15
No. 1 Manila.....	5.50	@	6.90
Fiber	5.50	@	6.90
Kraft No. 2.....	5.50	@	6.90

(F. o. b. Cars, Toronto)

News per ton—			
Rolls (contract)..)46.00		@	—
Sheets 54.00		@	—

Pulp

Ground wood.....$29.00		@	—
Unbleached sulphite.	44.00	@	—
Bleached sulphite...	54.00	@	—
Kraft	50.00	@	—
Soda	54.00	@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut...	2.00	@	—
Soft White.....	1.75	@	—
White Blk. News..	1.25	@	1.10
Book and Ledger—			
Flat Magazine and Book Stock (old)	.70	@	—
Light and Crumpled Book Stock.	.60	@	—
Ledgers and Writings	1.00	@	—
Manilas—			
New Manila Cut...	1.35	@	—
Printed Manilas...	.45	@	—
Kraft	.95	@	—
News and Scrap—			
Strictly Overissue..	.50	@	—
Strictly Folded....	.45	@	—
No. 1 Mixed Paper..	.30	@	—

Domestic Rags

(Price to Mills, f.o.b. Toronto)

No. 1 White Shirt Cuttings	.06¼	@	.06½
Light Prints.....	.02½	@	.02¾